Caution

Millions of men and women reload ammunition as a hobby or because the cost savings allow them to do more shooting. In order to become or to continue as a safe reloader, **you must be cautious and careful.** You are the production department and the quality control department. Later, when you shoot the ammunition that only you produced and checked, you are the person closest to the gun if it malfunctions because of faulty ammunition — yours.

Remember–you are dealing with an explosive material. You become a "miniature" manufacturer working with powders and primers that can, if misused, explode or burn, causing serious personal injury (including death) and property damage.

Read and study one or more good books that describe reloading techniques in detail. When using smokeless powders, use only the exact type and quantity recommended herein. Store and use smokeless powders–your powders–according to the safety rules listed in this booklet. Reload for quality, so that the safest and most accurate loads on the shooting line will be yours.

Ballistics

The ballistic data shown in this booklet were obtained in the laboratory under strictly controlled conditions. **You must load only those exact combinations that are listed.** Even then, different reloading techniques, plus industrial tolerances of each component, likely will cause your ammunition, or ammunition loaded by other competent laboratories, to yield slightly different ballistic data. Therefore, **charge recommendations in this booklet must never be exceeded.** Smart shooters and hunters know that accuracy, not maximum power, is their key to success.

Disclaimer

Alliant disclaims any warranties with respect to this product, the safety or suitability thereof, or the results obtained, whether express or implied, including, without limitation, any implied warranty of merchantability or fitness for a particular purpose and/or any other warranty. Buyers and users assume all risk, responsibility, and liability whatsoever for any and all injuries (including death), losses, or damages to persons or property arising from the use of this product, whether or not occasioned by seller's negligence or based on strict product liability or principles of indemnity or contribution. Alliant neither assumes nor authorizes any person to assume for it any liability in connection with the use of this product.

Powder Warnings

- **NEVER** substitute smokeless powder for black powder, or for Pyrodex, or for any other smokeless powder.
- **NEVER** mix together any two powders, regardless of type, brand, style, or source.
- **NEVER** use the data in this *Reloaders' Guide* for any other powders, even if advertised "similar to Bullseye" or "burns the same as Red Dot," etc.

Violation of any of the above could result in severe personal injury (including death) or gun damage.

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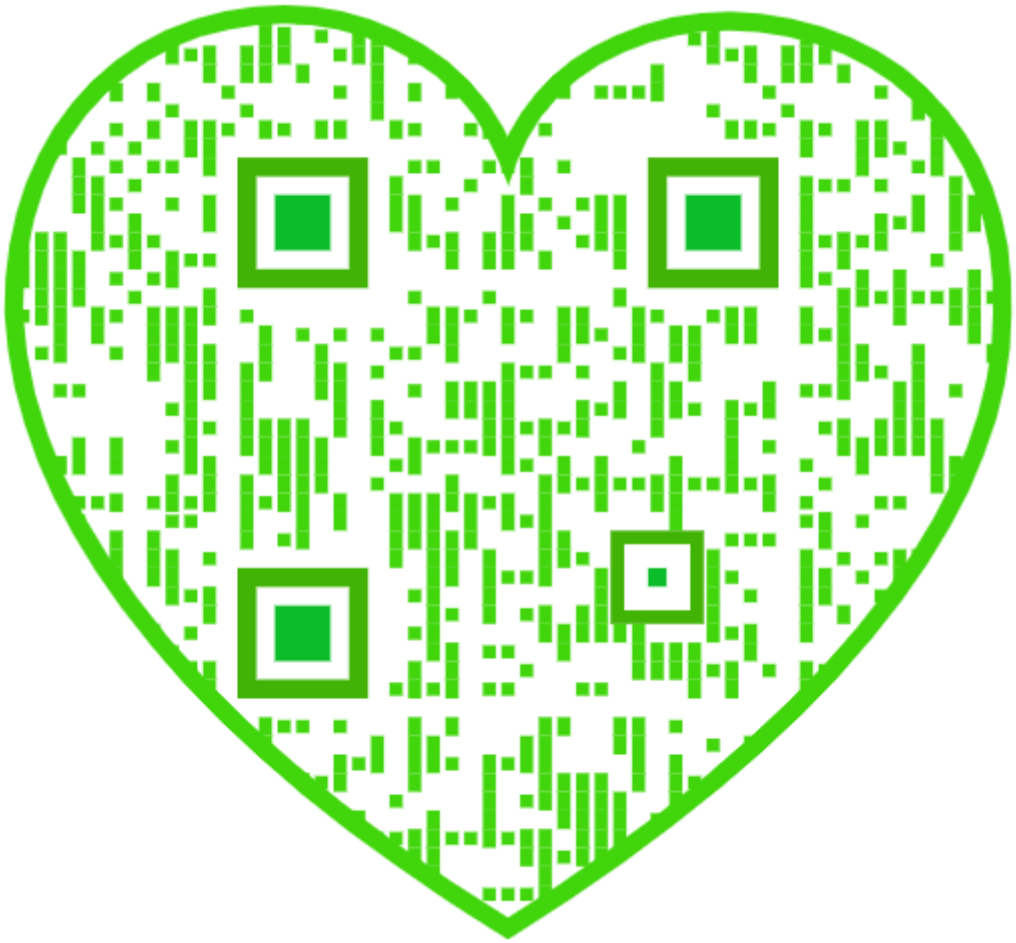

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WARNING: The shotgun shell loading data in this booklet are for lead shot only. Steel shot cannot be substituted. Also, do not use buffers or fillers of any kind.

Smokeless Powders for Reloading

We currently offer 14 powders for use in reloading. These are listed in the order of decreasing burning rates. Each powder listed is "slower" than those preceding it and "faster" than those following it. Among these Alliant smokeless powders, for example, Red Dot® burns more slowly than Bullseye®, but faster than Green Dot®.

Powder	Principal Use[1]	Can Also be Used In[1]
Bullseye®	Handgun Loads	12-Gauge Light Target Loads
Red Dot®	Light and Standard Shotshell Loads, 12-, 16-, and 20-Gauge	Handgun Loads
American Select™	12-Gauge Target Loads	Handgun Loads
Green Dot®	Standard and Medium Shotshell Loads, 12-, 16-, and 20-Gauge	Handgun Loads
Unique®	All-Around Shotshell Powder, 12-, 16-, 20-, and 28-Gauge	Handgun Loads
POWER PISTOL™	High performance pistol loads such as the 9mm, .40 S&W, and 10mm	Moderate pressure pistol cartridges like the .38 Special, .380 Auto, and .45 ACP
Herco®	Heavy Shotshell Loads, 10-, 12-, 16-, 20-, and 28-Gauge	Heavy Handgun Loads
Blue Dot®	Magnum Shotshell Loads, 10-, 12-, 16-, 20-, and 28-Gauge	Magnum Handgun Loads
2400®	Magnum Handgun Loads	Some Rifle and Shotshell Loads
Reloder® 7	Light Rifle Loads	Silhouette Loads
Reloder® 12	Medium Rifle Loads	Silhouette Loads
Reloder® 15	Medium Rifle Loads	Silhouette Loads
Reloder® 19	Magnum Rifle Loads	Target and hunting rifle loads
Reloder® 22	Magnum Rifle Loads	Maximum hunting loads

[1] *Use only in the loads printed in this Guide.*

Packaging

Powder	1-lb Canister	4-lb Canister	5-lb Canister	8-lb Keg
Bullseye, Red Dot, American Select, Green Dot, Unique, Herco, 2400	x	x		x
Power Pistol™	x	x		
Blue Dot	x		x	
Reloder Series	x		x	

All 14 powders are always in stock at distributors' magazines throughout the U.S.A., and in most countries where reloading is legally permitted and popular. Any reloader unable to purchase any of the 14 powders at retail stores that handle powders should write to the address on the back cover. We cannot ship directly, but we will endeavor to correct supply shortages in your area.

Powder Information

Smokeless sporting propellants are of two basic types – single-base and double-base. Single-base propellants derive their energy from nitrocellulose and double-base from a combination of nitrocellulose and nitroglycerin. Alliant propellants range from the "near" single-base American Select (2% nitroglycerin) to the high nitroglycerin (40%) double-base Bullseye. In addition, our propellants contain stabilizers for long storage life and various other ballistic modifiers which reduce flash, improve combustion efficiency, and promote clean burning.

Some of our propellants also have a chemical coating on the surface to control the burning rate. This creates a progressive burn for achieving higher velocities at lower pressures. All of our propellants have a graphite glaze, which ensures smooth, consistent metering of charges through volumetric reloaders.

Alliant propellants are extruded and cut into circular flakes or cylinders by precision dies and cutting equipment. Granule size tolerances are very tight and uniform to prevent separation of different size granules and to ensure consistent ballistic performance, load after load.

By utilizing a precise combination of chemical formulation, granule size, and chemical coatings, we are able to tailor the burning characteristics of our propellants to achieve the best overall performance in a wide range of loads.

Because each of our propellants is specifically engineered to have different burn rates and performance characteristics, **NEVER BLEND OR MIX DIFFERENT POWDERS, AND USE ONLY THE GRADE AND QUANTITY RECOMMENDED IN THIS RELOADER'S GUIDE.**

All powders burn with great precision and rapidity inside the gun chamber, generating the hot, high-pressure gas that accelerates the bullet (or shot) and drives it toward the target. It is critically important for safety that the powder used is matched to the bullet (or shot) weight and other factors; otherwise, the gun parts may be deformed or may even burst and cause serious personal injury (including death). Shot-to-shot accuracy can also be degraded by deviations from recommended loads. Even after 80 years of producing and testing powders, ballisticians are unable to calculate and predict exact ballistic results; we must test-fire our powders with each set of components and record the results. Therefore, the ballistic values and recommended combinations listed in this booklet must be followed without deviation.

Working up charges. For shotgun loads, use the charge weight shown. However, for all rifle and pistol loads, first load and fire a few cartridges at 10% less charge than is shown, watching for any sign of excessive pressure (difficult extraction, flattened or blown primers, unusual recoil).

Handgun loads. Many pistol and revolver loads require only small amounts of fast-burning powders; therefore: (1) guard against accidental double charges, and even multiple charges, whether loading with handtools or with progressive loading devices; (2) be sure that each bullet is positioned in the case so that the minimum overall length is not violated.

Dram Equivalent

Prior to the commercialization of smokeless powder, shotgun shells were loaded with black powder. The weight measurement system used for black powder was "drams." Compared with black powder, smokeless powder is more dense and MUCH more energetic, so it cannot safely be measured and used like black powder. Indeed, a different weight system was selected for smokeless powder: "grains," wherein 7,000 grains equal one pound.

Since many shooters still wanted to be able to compare their smokeless powder loads with the original black powder loads, the term "dram equivalent" evolved. Simply stated, the dram equivalent is an indicator of the velocity of a particular shot load. But note that the charge and weight of smokeless powder must not be calculated from the dram equivalent.

Notice

We have inserted information on the properties and storage of smokeless powder for your understanding, so that you can avoid unnecessary risks when using it. This information, on pages 8 and 9, was published initially by the Sporting Arms and Ammunition Manufacturers' Institute, Inc., several years ago in the interest of safety. You must read these pages carefully and comply with the precautions listed. If you have questions, please call or write to us at the address on the back cover.

Important Safety and Health Precautions

To perform in a gun, powders must ignite easily and burn rapidly. These characteristics require use of common sense to avoid accidents. YOU MUST OBSERVE THESE PRECAUTIONS:

1. DO NOT smoke when reloading.
2. DO NOT use spark-producing tools.
3. DO NOT mix powders of different kinds.
4. DO NOT leave powder where children can get it.
5. DO NOT try to load when distracted.
6. Avoid an open fire or working near spark-producing machinery.
7. Pour out only the amount of powder needed for immediate work.
8. Check the powder measure each time it is used. Make sure the settings have not been accidentally changed. Check-weigh “thrown charges” frequently.
9. Clean up any spilled powders. Use a brush and dustpan; do not use a vacuum cleaner. Dispose of spilled powder as described in the SAAMI pages of this Guide.
10. Store powder only in its original container, which was carefully designed for this usage. DO NOT REPACKAGE. Do not purchase or accept any Alliant powder not in its original, FACTORY-SEALED container.
11. Be sure the powder container is completely empty before discarding. Do not use the container to store other powders or materials, or for any other purpose.
12. Always keep in mind that smokeless powder is an explosive material and highly flammable. It should always be stored and handled in such a way as to avoid impact, friction, heat, sparks, or flame.
13. Wear safety glasses when reloading.
14. This material contains nitroglycerin. Inhalation, skin contact, or ingestion may cause severe headache, nausea, and lowering of blood pressure. THEREFORE, THE FOLLOWING PRECAUTIONS MUST BE OBSERVED WHEN HANDLING POWDERS:

    A. Do not take internally. In case of ingestion, cause vomiting. Call a physician.

    B. Avoid contamination of food, beverages, or smoking materials.

    C. Avoid breathing dust. Ensure adequate ventilation during handling.

    D. Wash thoroughly after handling and before eating, drinking, or smoking.

    E. Do not carry powder in clothing.

You must also always remember:

1. Establish a routine for reloading. It will result in more uniform loads and less chance of error.
2. Some primers are more powerful than others (they produce more gas at a higher temperature). Use only the primers specified herein.
3. Shotshell wads differ in their sealing ability. Use only the load combinations specified herein.
4. If you use cast bullets, their diameter, hardness, lubrication, and crimp will affect the ballistics.
5. The shotshell loads in this booklet are for use with LEAD SHOT ONLY!
6. Use only the brands of powder and components shown in our tables. Do not substitute other types.
7. Discharging firearms in poorly ventilated areas, cleaning firearms, or handling ammunition may result in exposure to lead, a substance known to cause birth defects, reproductive harm, and other serious physical injury. Have adequate ventilation at all times. Wash hands and face thoroughly after handling and before coming in contact with food, chewing materials, and smoking material.

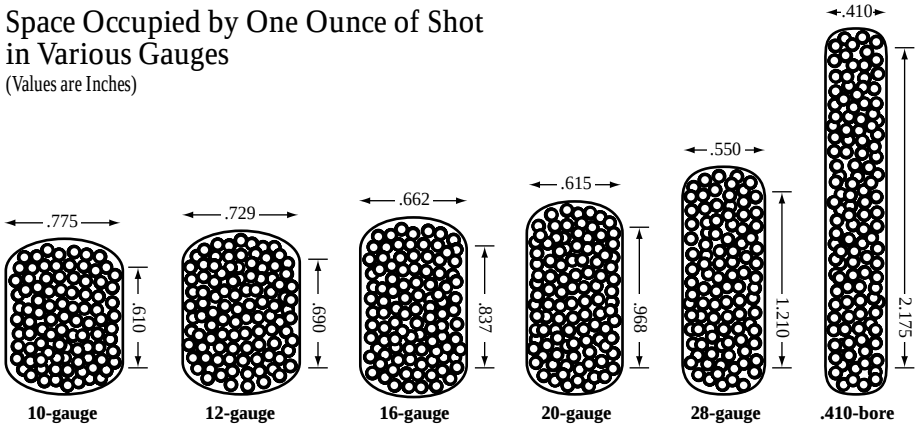
Reference Tables

Approximate Number of Pellets in Specific Weights of Lead Shot (Sizes 2 Through 9)

Weight, oz	No. 2	No. 4	No. 5	No. 6	No. 7½	No.8	No. 8½	No. 9
½	45	67	85	112	175	205	242	292
¾	67	101	127	168	262	308	363	439
⅞	79	118	149	197	306	359	425	512
1	90	135	170	225	350	410	485	585
1⅛	101	152	191	253	393	461	545	658
1¼	112	169	213	281	437	513	605	731
1⅜	124	186	234	309	481	564	665	804
1½	135	202	255	337	525	615	730	877

Space Occupied by One Ounce of Shot in Various Gauges

(Values are Inches)



Internal Diameter of the Barrel in Several Shotgun Gauges

10-Gauge—0.775-Inch
12-Gauge—0.729-Inch
16-Gauge—0.662-Inch
20-Gauge—0.615-Inch
28-Gauge—0.550-Inch
.410-Bore—0.410-Inch

Reference Tables (continued)

Number of Shells That Can Be Loaded with One Pound of Powder at Various Grains Per Load

(The term grain is a measure of weight: 7,000 grains equal one pound)

Grains/ Load	Loads/ Pound	Grains/ Load	Loads/ Pound	Grains/ Load	Loads/ Pound	Grains/ Load	Loads/ Pound	Grains/ Load	Loads/ Pound	Grains/ Load	Loads/ Pound
12	583	23	304	34	205	45	156	56	125	67	104
13	538	24	291	35	200	46	152	57	123	68	103
14	500	25	280	36	194	47	149	58	121	69	101
15	466	26	269	37	189	48	146	59	119	70	100
16	437	27	259	38	184	49	143	60	117	71	99
17	411	28	250	39	179	50	140	61	115	72	97
18	388	29	241	40	175	51	137	62	113	73	96
19	368	30	233	41	170	52	135	63	111	74	95
20	350	31	225	42	166	53	132	64	109	75	93
21	333	32	218	43	162	54	130	65	108	76	92
22	318	33	212	44	159	55	127	66	106	77	91

Typical Percentage of Pellets in a 30-Inch Circle at 40 Yards (Pattern) for Various Choke Sizes

(Choke is a Constriction at the Muzzle of a Shotgun Barrel)

Full Choke—70%

Improved Modified Choke—65 to 70%

Modified Choke—55%

Improved Cylinder—50%

True Cylinder—40%

Ballistic Data

The velocity and pressure obtained with the specific combinations of shell, wad, primer, bullet or shot weight, powder, and powder weight provided in this booklet were obtained in a laboratory, where considerable effort is made to control the load and test conditions. Velocity was measured with a chronograph (electric stopwatch). Pressure was measured either by compressing copper cylinders, or electronically, by use of a piezoelectric transducer.

Guns are designed to take a considerable amount of internal pressure, but if this is exceeded, they burst violently. Be alert to signs of excess pressure, such as heavy recoil, flattened primers, or blown primers. Don't make changes in the suggested loads.

Tone variations (shaded areas) used in the reloading tables are for ease of reading and do not represent preferred loads.

Each shotshell table lists DRAM EQUIVALENT in the first column. This number is not used in any way during reloading. The quantity of powder to use is listed in GRAINS, which are a measure of weight, under each powder column.

Every reloader needs a good-quality scale for weighing each powder charge, or for checking the weight of powder thrown by volumetric loaders.

Special Notes Regarding Components Other Than Powder

A. Shotgun Shells. Manufacturers may sell ammunition under different brand names that are identical for reloading purposes. Following are popular variations. When in doubt, consult the ammunition producer.

- Federal Hi Power Plastic same as Duck and Pheasant, Field, Game, and Dove and Squirrel or Top Gun.
- Federal Premium (Integral Base Wad)
- Remington-Peters. Same as Mohawk brand shells.
- Winchester AA-Type (Compression-Formed) same as AA Target, Upland and Super Double X.
- Winchester Polyformed Type (Reifenhauser Tube) same as Duck and Pheasant, Dove and Squirrel, and Sears Brand.

B. Primers

- CCI 109 and CCI 209 are ballistically identical and can be interchanged.
- CCI 209M (Magnum) is "hotter" and cannot be substituted for CCI 109 or 209. Use 209M only as listed.
- Rem. 209 is "hotter" and cannot be substituted for Rem. 97★ or Rem. 209P primer.
- Rem. 209P is interchangeable with Rem. 97★ primer.
- Federal 209A is "hotter" and cannot be substituted for Federal 209.

C. Wads. Card wads and fiber wads are used for certain slug and buckshot loads and a few light shotshell loads. Do not interchange wads.

D. Shot. Use only clean lead shot. DO NOT USE STEEL SHOT IN SHOTSHELL LOADS LISTED IN THIS GUIDE.

E. Shot Buffers. Do not add any buffers or fillers of any kind to shotshell loads listed in this Guide.

F. Cards and Fillers. For revolver, pistol, and rifle cartridge reloading, do not add any cards, kapok, or fillers of any kind to loads listed in this Guide.

Black Powder

Black powder is entirely different from smokeless powder. NEVER substitute one for the other. Smokeless powders have much more energy than black powder. NEVER attempt to use smokeless powder in black powder guns or saluting cannon; they may blow up and cause serious personal injury (including death).

1996 Powder Bushing Charts

A reloading scale is *required* to check the nominal weight of a powder charge.

Powder bushings can vary in the charge weight they drop and could vary as much as several grains under certain conditions.

Powder density, moisture content, and loading technique can cause a variation from the bushing weights listed on the charts. Also, the loading machine vibration affects charge weights. A complete loading cycle should be completed to *assure* an average powder charge weight.

The information in these tables has been supplied by the reloading machine manufacturers and *is not a reloading recommendation* or a result of Alliant's testing.

Lee Powder Bushing Chart (Units shown in grains)

Bushing #	.095	.100	.105	.110	.116	.122	.128	.134	.141	.148	.151*	.155	.163	.171	.180	.189	.198
Red Dot	11.0	11.6	12.2	12.8	13.5	14.2	14.8	15.5	16.4	17.2	17.5	18.0	18.9	19.8	20.9	21.9	23.0
Green Dot	12.3	13.0	13.6	14.3	15.1	15.8	16.6	17.4	18.3	19.2	19.6	20.1	21.2	22.2	23.4	24.5	25.7
Unique	14.3	15.0	15.8	16.5	17.4	18.3	19.2	20.1	21.2	22.2	22.7	23.3	24.5	25.7	27.0	28.4	29.7
Herco	13.9	14.6	15.3	16.1	16.9	17.8	18.7	19.6	20.6	21.6	22.0	22.6	23.8	25.0	26.3	27.6	28.9
Blue Dot	18.0	19.0	19.9	20.8	22.0	23.1	24.3	25.4	26.7	28.0	28.6	29.4	30.9	32.4	34.1	35.8	37.5
2400	21.0	22.1	23.2	24.3	25.6	27.0	28.3	29.6	31.2	32.7	33.4	34.3	36.0	37.8	39.8	41.8	43.8

**NOTE: Only available with Lee Load-Fast.*

Hornady Powder Bushing Chart for 366 Auto and Apex 91 (Units shown in grains)

Grains	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
Red Dot			384	393	405	423	438	453	468	480	489	498	510	519																					
American Select							417	423	432	447	456	468	477	483																					
Green Dot			363	378	390	405	420	435	447	456	468	480	492	501	513	522	534	—	549	558															
Unique				342	354	369	381	393	405	414	423	435	444	453	465	474	483	492	501	—	510														
Herco				357	369	381	393	405	414	426	438	450	462	471	477	489	498	—	513	522	531	—	549	558	564	573	—	588	594							
Blue Dot									366	372	381	390	396	408	414	423	435	441	447	459	468	474	483	489	495	501	510	516	522	531	534	543	549	555	561
2400		256	266	—	291	300	312	324	330	339																									

Ponsness/Warren Powder Bushing Chart (Units shown in grains)

Bushing #	1A	2A	3A	A	B	C	C1	D	D1	E	E1	E2	F	F1	F2	G	G1	H	I	J	J1	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA
Bullseye										16.2	16.8	17.7	18.7	19.4																							
Red Dot											11.6	12.2	12.9	13.4	13.7	14.5	14.7	15.7	16.5	16.8	17.3	17.6	18.5	19.4	20.7	20.9	21.3	21.9	22.9									
American Select																	16.4	17.5	18.2	18.8	19.4	19.9	20.6	22.0													
Green Dot											11.7	12.3	13.1	13.6	13.8	14.7	14.9	15.9	16.7	17.0	17.5	17.9	18.8	19.6	21.1	21.3	21.8	22.3	23.2	23.6	25.3	26.5					
Unique									12.6	14.2	14.8	15.6	16.5	17.2	17.5	18.7	19.0	20.2	21.2	21.7	22.3	22.7	24.0	25.0	26.8	27.1	27.6										
Herco									12.3	13.8	14.4	15.1	16.0	16.6	16.9	18.0	18.3	19.5	20.5	20.9	21.5	21.9	23.0	24.0	25.7	26.0	26.5	27.1	28.1	28.8	30.7	32.1	33.1	34.9	35.4	37.2	
Blue Dot									16.4	18.4	19.2	20.1	21.3	22.2	22.6	23.9	24.3	25.9	27.2	27.7	28.5	29.1	30.6	31.9	34.2	34.5	35.2	36.0	37.5	38.1	40.7	42.5	43.8	46.5	47.2	49.5	55.7
2400		12.3	13.2	15.2	16.1	16.8	17.6	18.3	19.0	21.3	22.2	23.3	24.7	25.7	26.1	27.7	28.2	30.0	31.5	32.2	33.1	33.7	35.5	37.1	39.8	40.2	41.1	42.0	43.8	44.5	47.5	49.8					

MEC Powder Bushing Chart (Units shown in grains)

Bushing #	10	11	12	12A	13	13A	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Bullseye	8.6	9.1	9.6	10.1	10.6	11.2	11.7	12.3	12.9	13.5	14.1	14.8	15.4	16.1	16.8	17.5	18.2	18.9	19.6	20.4	21.2	21.9	22.8	23.7
Red Dot	6.3	6.7	7.1	7.5	7.9	8.3	8.7	9.2	9.6	10.1	10.6	11.1	11.6	12.1	12.6	13.1	13.7	14.2	14.9	15.7	16.4	17.1	17.8	18.5
American Select	6.9	7.3	7.7	8.2	8.6	9.1	9.6	10.1	10.6	11.1	11.7	12.2	12.8	13.3	13.9	14.5	15.1	15.7	16.4	17.0	17.7	18.3	19.0	19.7
Green Dot	6.7	7.2	7.6	8.0	8.4	8.9	9.3	9.8	10.3	10.8	11.3	11.8	12.4	12.9	13.5	14.0	14.6	15.2	15.8	16.4	17.0	17.7	18.3	19.0
Unique	7.5	7.9	8.4	8.9	9.4	9.9	10.4	10.9	11.4	12.0	12.6	13.1	13.7	14.5	15.1	15.8	16.4	17.1	17.7	18.4	19.1	19.8	20.5	21.1
Herco	7.9	8.3	8.8	9.3	9.8	10.4	10.9	11.4	12.0	12.6	13.2	13.8	14.4	15.0	15.7	16.3	17.0	17.7	18.4	19.1	19.8	20.6	21.3	22.1
Blue Dot	10.8	11.3	11.9	12.5	13.1	13.7	14.4	15.0	15.7	16.3	17.0	17.7	18.4	19.2	20.1	21.0	21.9	22.8	23.7	24.6	25.5	26.4	27.3	28.2
2400	11.8	12.5	13.3	14.0	14.8	15.6	16.4	17.2	18.1	18.9	19.8	20.7	21.7	22.6	23.6	24.6	25.6	26.6	27.7	28.8	29.9	31.0	32.1	33.3

MEC Powder Bushing Chart continued (Units shown in grains)

Bushing #	32	33	34	35	36	37	38	38A	39	39A	40	40A	41	41A	42	42A	43	43A	44	44A	45	45A	46
Bullseye	24.6	25.5	26.4	27.3	28.2	29.1	30.1	31.0	31.9	32.8	33.7	34.7	35.7	36.9	38.1	39.4	40.7	42.0	43.3	44.6	46.0	47.4	48.8
Red Dot	19.2	19.9	20.6	21.3	21.9	22.7	23.3	24.1	24.7	25.2	25.9	26.6	27.3	27.9	28.4	29.3	29.9	30.8	31.5	32.1	32.7	33.4	34.1
American Select	20.4	21.1	21.8	22.6	23.3	24.1	24.9	25.7	26.5	27.3	28.1	28.9	29.8	30.7	31.5	32.4	33.3	34.2	35.2	36.4	37.0	38.0	39.0
Green Dot	19.6	20.3	21.0	21.7	22.4	23.2	23.9	24.7	25.4	26.2	27.0	27.8	28.6	29.4	30.3	31.1	32.0	32.8	33.7	34.6	35.5	36.4	37.4
Unique	21.7	22.5	23.2	24.0	24.8	25.6	26.5	27.3	28.2	29.0	29.9	30.8	31.7	32.6	33.5	34.5	35.4	36.4	37.4	38.4	39.4	40.4	41.4
Herco	22.9	23.7	24.5	25.3	26.2	27.0	27.9	28.8	29.7	30.6	31.5	32.4	33.4	34.3	35.3	36.3	37.3	38.3	39.3	40.4	41.4	42.5	43.6
Blue Dot	29.1	30.5	31.6	32.7	33.8	35.0	36.1	37.3	38.5	39.7	40.9	42.2	43.4	44.7	46.0	47.4	48.7	50.1	51.5	52.9	54.3	55.7	57.2
2400	34.5	35.7	36.9	38.1	39.4	40.7	42.0	43.3	44.6	46.0	47.4	48.8	50.2	51.6	53.1	54.6	56.1	57.6	59.2	60.7	62.3	63.9	65.6

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KEEP OUT OF REACH OF CHILDREN

Properties and Storage of Smokeless Powder

Ammunition handloading has become increasingly popular in recent years. This information discusses properties of smokeless powder and offers recommendations for its storage.

This information is intended to increase the knowledge of all concerned individuals and groups regarding smokeless powder. The statements and recommendations made are not intended to supersede local, state, or Federal regulations. Proper authorities should be consulted on regulations for storage and use of smokeless powder in each specific community. A leaflet entitled *"Sporting Ammunition Primers: Properties, Handling, & Storage for Hand Loading"* supplements this information on smokeless powder.

Properties of Smokeless Powder

Smokeless powders, or propellants, are essentially mixtures of chemicals designed to burn under controlled conditions at the proper rate to propel a projectile from a gun.

Smokeless powders are made in three forms:

1. Thin, circular flakes or wafers
2. Small cylinders
3. Small spheres

Single-base smokeless powders derive their main source of energy from nitrocellulose.

The energy released from double-base smokeless powders is derived from both nitrocellulose and nitroglycerin.

All smokeless powders are extremely flammable; by design, they are intended to burn rapidly and vigorously when ignited.

Oxygen from the air is not necessary for the combustion of smokeless powders since they contain sufficient built-in oxygen to burn completely, even in an enclosed space such as the chamber of a firearm.

In effect, ignition occurs when the powder granules are heated above their ignition temperature. This can occur by exposing powder to:

1. A flame such as a match or primer flash.
2 An electrical spark or the sparks from welding, grinding, etc.
3. Heat from an electric hot plate or a fire directed against or near a closed container even if the powder itself is not exposed to the flame.

When smokeless powder burns, a great deal of gas at high temperature is formed. If the powder is confined, this gas will create pressure in the surrounding structure. The rate of gas generation is such, however, that the pressure can be kept at a low level if sufficient space is available or if the gas can escape.

In this respect smokeless powder differs from blasting agents or high explosives such as dynamite or blasting gelatin, although smokeless powder may contain chemical ingredients common to some of these products.

High explosives such as dynamite are made to detonate, that is, to change from solid state to gaseous state with evolution of intense heat at such a rapid rate that shock waves are propagated through any medium in contact with them. Such shock waves exert pressure on anything they contact, and, as a matter of practical consideration, it is almost impossible to satisfactorily vent away from the effects of a detonation involving any appreciable quantity of dynamite.

Smokeless powder differs considerably in its burning characteristics from common "black powder."

Black powder burns essentially at the same rate out in the open (unconfined) as when in a gun.

When ignited in an unconfined state, smokeless powder burns inefficiently with an orange-colored flame. It produces a considerable amount of light brown noxious smelling smoke. It leaves a residue of ash and partially burned powder. The flame is hot enough to cause severe burns.

The opposite is true when it burns under pressure as in a cartridge fired in a gun. Then it produces very little smoke, a small glow, and leaves very little or no residue. The burning rate of smokeless powder increases with increased pressure.

If burning smokeless powder is confined, gas pressure will rise and eventually can cause the container to burst. Under such circumstances, the bursting of a strong container creates effects similar to an explosion.

For this reason, the Department of Transportation (formerly Interstate Commerce Commission) sets specifications for shipping containers for propellants and requires tests of loaded containers — under actual fire conditions — before approving them for use.

When smokeless powder in D.O.T. approved containers is ignited during such tests, container seams split open or lids pop off — to release gases and powder from confinement at low pressure.

How to Check Smokeless Powder for Deterioration

Although modern smokeless powders are basically free from deterioration under proper storage conditions, safe practices require a recognition of the signs of deterioration and its possible effects.

Powder deterioration can be checked by opening the cap on the container and smelling the contents. Powder undergoing deterioration has an irritating acidic odor. (Don't confuse this with common solvent odors such as alcohol, ether and acetone.)

Check to make certain that powder is not exposed to extreme heat as this may cause deterioration. Such exposure produces an acidity which accelerates further reaction and has been known, because of the heat generated by the reaction, to cause spontaneous combustion.

Never salvage powder from old cartridges and do not attempt to blend salvaged powder with new powder. Don't accumulate old powder stocks.

The best way to dispose of deteriorated smokeless powder is to burn it out in the open at an isolated location in small shallow piles (not over 1" deep). The quantity burned in any one pile should never exceed one pound. Use an ignition train of slow burning combustible material so that the person may retreat to a safe distance before powder is ignited.

Considerations for Storage of Smokeless Powder

Smokeless powder is intended to function by burning, so it must be protected against accidental exposure to flame, sparks or high temperatures.

For these reasons, it is desirable that storage enclosures be made of insulating materials to protect the powder from external heat sources.

Once smokeless powder begins to burn, it will normally continue to burn (and generate gas pressure) until it is consumed.

D.O.T. approved containers are constructed to open up at low internal pressures to avoid the effects normally produced by the rupture or bursting of a strong container.

Storage enclosures for smokeless powder should be constructed in a similar manner:

1. Of fire-resistant and heat-insulating materials to protect contents from external heat.
2. Sufficiently large to satisfactorily vent the gaseous products of combustion, which would result if the quantity of smokeless powder within the enclosure accidentally ignited.

If a small, tightly enclosed storage enclosure is loaded to capacity with containers of smokeless powder, the walls of the enclosure will expand or move outwards to release the gas pressure — if the powder in storage is accidentally ignited.

Under such conditions, the effects of the release of gas pressure are similar or identical to the effects produced by an explosion.

Hence only the smallest practical quantities of smokeless powder should be kept in storage, and then in strict compliance with all applicable regulations and recommendations of the National Fire Protection Association (reprinted at end of leaflet).

Recommendations for Storage of Smokeless Powder

STORE IN A COOL, DRY PLACE. Be sure the storage area selected is free from any possible sources of excess heat and is isolated from open flame, furnaces, hot water heaters, etc. Do not store smokeless powder where it will be exposed to the sun's rays. Avoid storage in areas where mechanical or electrical equipment is in operation. Restrict from the storage areas heat or sparks which may result from improper, defective or overloaded electrical circuits.

DO NOT STORE SMOKELESS POWDER IN THE SAME AREA WITH SOLVENTS, FLAMMABLE GASES, OR HIGHLY COMBUSTIBLE MATERIALS.

STORE ONLY IN DEPARTMENT OF TRANSPORTATION APPROVED CONTAINERS.

Do not transfer the powder from an approved container into one which is not approved.

DO NOT SMOKE IN AREAS WHERE POWDER IS STORED OR USED. PLACE APPROPRIATE "NO SMOKING" SIGNS IN THESE AREAS.

DO NOT SUBJECT THE STORAGE CABINETS TO CLOSE CONFINEMENT.

STORAGE CABINETS SHOULD BE CONSTRUCTED OF INSULATING MATERIALS AND WITH A WEAK WALL, SEAMS OR JOINTS TO PROVIDE AN EASY MEANS OF SELF-VENTING.

DO NOT KEEP OLD OR SALVAGED POWDERS. Check old powders for deterioration regularly. Destroy deteriorated powders immediately.

OBEY ALL REGULATIONS REGARDING QUANTITY AND METHODS OF STORING. Do not store all your powders in one place. If you can, maintain separate storage locations. Many small containers are safer than one or more large containers.

KEEP YOUR STORAGE AND USE AREA CLEAN. Clean up spilled powder promptly. Make sure the surrounding area is free of trash or other readily combustible materials.

10-3 Smokeless Propellants.

10-3.1 Quantities of smokeless propellants not exceeding 25 lb (11.3 kg) in shipping containers approved by the U.S. Department of Transportation, may be transported in a private vehicle.

10-3.2 Quantities of smokeless propellants exceeding 25 lb (11.3 kg) but not exceeding 50 lb (22.7 kg), transported in a private vehicle, shall be transported in a portable magazine having wood walls of at least 1-in. (25.4-mm) nominal thickness.

10-3.3 Transportation of more than 50 lb (22.7 kg) of smokeless propellants in a private vehicle is prohibited.

10-3.4 Commercial shipments of smokeless propellants in quantities not exceeding 100 lb (45.4 kg) are classified for transportation purposes as flammable solids when packaged according to U.S. Department of Transportation Hazardous Materials Regulations (Title 49, Code of Federal Regulations, Part 173.197a), and shall be transported accordingly.

10-3.5 Commercial shipments of smokeless propellants exceeding 100 lb (45.4 kg) or not packaged in accordance with the regulations cited in 10-3.4 shall be transported according to U.S. Department of Transportation regulations for Class B propellant explosives.

10-3.6 Smokeless propellants shall be stored in shipping containers specified by U.S. Department of Transportation Hazardous Materials Regulations.

10-3.7 Smokeless propellants intended for personal use in quantities not exceeding 20 lb (9.1 kg) may be stored in original containers in residences. Quantities exceeding 20 lb (9.1 kg), but not exceeding 50 lb (22.7 kg), may be stored in residences if kept in a wooden box or cabinet having walls of at least 1-in. (25.4-mm) nominal thickness.

10-3.8 Not more than 20 lb (9.1 kg) of smokeless propellants, in containers of 1-lb (0.45-kg) maximum capacity, shall be displayed in commercial establishments.

10-3.9 Commercial stocks of smokeless propellants shall be stored as follows:

(a) Quantities exceeding 20 lb (9.1 kg), but not exceeding 100 lb (45.4 kg), shall be stored in portable wooden boxes having walls of at least 1-in. (25.4 mm) thickness.

(b) Quantities exceeding 100 lb (45.4 kg), but not exceeding 800 lb (363 kg), shall be stored in nonportable storage cabinets having walls of at least 1-in. (25.4-mm) thickness. Not more than 400 lb (181 kg) may be stored in any one cabinet and cabinets shall be separated by a distance of at least 25 ft. (7.63 m) or by a fire partition having a fire resistance of at least 1 hour.

(c) Quantities exceeding 800 lb (363 kg), but not exceeding 5,000 lb (2268 kg), may be stored in a building if the following requirements are met:

1. The warehouse or storage room shall not be accessible to unauthorized personnel.
2. Smokeless propellant shall be stored in nonportable storage cabinets having wood walls at least 1 in. (25.4-mm) thick and having shelves with no more than 3 ft (0.92 m) separation between shelves.
3. No more than 400 lb (181 kg) shall be stored in any one cabinet.
4. Cabinets shall be located against walls of the storage room or warehouse with at least 40 ft (12.2 m) between cabinets.
5. Separation between cabinets may be reduced to 20 ft. (6.1 m) if barricades twice the height of the cabinets are attached to the wall, midway between each cabinet. The barricades shall extend at least 10 ft (3 m) outward, shall be firmly attached to the wall, and shall be constructed of ¼-in. (6.4-mm) boiler plate, 2-in. (51-mm) thick wood, brick, or concrete block.
6. Smokeless propellant shall be separated from materials classified by the U.S. Department of Transportation as flammable liquids, flammable solids, and oxidizing materials by a distance of 25 ft (7.63 m) or by a fire partition having a fire resistance of at least 1 hour.
7. The building shall be protected by an automatic sprinkler system installed according to NFPA 13, Standard for the Installation of Sprinkler Systems.

(d) Smokeless propellants not stored according to (a), (b) and (c) above shall be stored in a Type 4 magazine constructed and located according to Chapter 6.

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10-Gauge, 3½-in. Federal Plastic with Paper Wad Base

Dram Equiv.	Shot Wt. (ounces)	Velocity (fps)	Primer	Wad	Red Dot Grains	Red Dot Approx. psi	Green Dot Grains	Green Dot Approx. psi	Unique Grains	Unique Approx. psi	Herco Grains	Herco Approx. psi	Blue Dot Grains	Blue Dot Approx. psi
4	1¼	1,265	CCI 209M	Rem. SP10 (see Note 6)			29.5	8,300						
			Win. 209	Rem. SP10 (see Note 6)			29.0	8,800						
4¼	1⅝	1,285	CCI 209M	Rem. SP10 (see Note 4)							36.0	10,300	45.0	8,000
			Win. 209	Rem. SP10 (see Note 4)									45.5	8,300
4½	1⅞	1,270	CCI 209M	Rem. SP10 (see Note 3)									45.5	9,900
			Win. 209	Rem. SP10 (see Note 3)									45.5	10,200
4¼	2	1,210	CCI 209M	Rem. SP10 (see Note 2)									43.5	9,200
			Win. 209	Rem. SP10 (see Note 2)									44.0	9,400
4¼	2¼	1,165	CCI 209M	Rem. SP10 (see Note 1)									42.0	9,800
			Win. 209	Rem. SP10 (see Note 1)									42.5	10,200

10-Gauge, 3½-in. Remington SP Shell

Dram Equiv.	Shot Wt. (ounces)	Velocity (fps)	Primer	Wad	Red Dot Grains	Red Dot Approx. psi	Green Dot Grains	Green Dot Approx. psi	Unique Grains	Unique Approx. psi	Herco Grains	Herco Approx. psi	Blue Dot Grains	Blue Dot Approx. psi
4	1¼	1,265	CCI 209M	Rem. SP10 (see Note 6)			28.5	8,800	31.0	7,500				
			Win. 209	Rem. SP10 (see Note 6)			29.0	8,800	31.0	7,600				
4¼	1⅝	1,285	CCI 209M	Rem. SP10 (see Note 4)									43.5	8,500
			Win. 209	Rem. SP10 (see Note 4)									44.0	8,500
4½	1⅞	1,270	CCI 209M	Rem. SP10 (see Note 3)									44.0	9,800
			Win. 209	Rem. SP10 (see Note 3)									44.5	9,100
4¼	2	1,210	CCI 209M	Rem. SP10 (see Note 2)									42.0	10,400
			Win. 209	Rem. SP10 (see Note 2)									42.5	10,100
4¼	2¼	1,165	CCI 209M	Rem. SP10									40.5	10,400
			Win. 209	Rem. SP10									41.0	10,500

10-Gauge, 3½-in. Winchester Polyformed with Plastic Base Wad

Dram Equiv.	Shot Wt. (ounces)	Velocity (fps)	Primer	Wad	Red Dot Grains	Red Dot Approx. psi	Green Dot Grains	Green Dot Approx. psi	Unique Grains	Unique Approx. psi	Herco Grains	Herco Approx. psi	Blue Dot Grains	Blue Dot Approx. psi
4	1¼	1,265	Win. 209	Rem. SP10 (see Note 5)			28.5	8,600						
			CCI 209M	Rem. SP10 (see Note 5)			28.0	8,500						
4¼	1⅝	1,285	Win. 209	Rem. SP10 (see Note 3)									45.0	8,800
			CCI 209M	Rem. SP10 (see Note 3)							35.5	10,400	44.5	8,700
4½	1⅞	1,270	Win. 209	Rem. SP10 (see Note 2)									45.5	10,200
			CCI 209M	Rem. SP10 (see Note 2)									45.0	9,800
4¼	2	1,210	Win. 209	Rem. SP10 (see Note 1)									43.5	9,500
			CCI 209M	Rem. SP10 (see Note 1)									43.0	9,400
4¼	2¼	1,165	Win. 209	Rem. SP10									42.0	10,500
			CCI 209M	Rem. SP10									41.5	10,500

NOTES:
1. Add one 20-gauge, 0.135-in. thick card wad to the inside bottom of the shot cup.
2. Add two 20-gauge, 0.135-in. thick card wads to the inside bottom of the shot cup.
3. Add three 20-gauge, 0.135-in. thick card wads to the inside bottom of the shot cup.
4. Add four 20-gauge, 0.135-in. thick card wads to the inside bottom of the shot cup.
5. Add five 20-gauge, 0.135-in. thick card wads to the inside bottom of the shot cup.
6. Add six 20-gauge, 0.135-in. thick card wads to the inside bottom of the shot cup.

12-Gauge, 3½-in. Federal Unibody Plastic Shells

Dram Equiv.	Shot Wt. (ounces)	Velocity (fps)	Primer	Wad	Red Dot Grains	Red Dot Approx. psi	Green Dot Grains	Green Dot Approx. psi	Unique Grains	Unique Approx. psi	Herco Grains	Herco Approx. psi	Blue Dot Grains	Blue Dot Approx. psi
4	1⅞	1,200	CCI 209M	Fed. 12SO (see Note 1)									41.0	9,100
				Win. WAA12SL (see Note 1)									41.0	8,900
				Rem. R12L (see Note 2)									40.5	9,600
			Win. 209	Fed. 12SO (see Note 1)									40.0	9,000
4¼	1⅞	1,255	CCI 209M	Fed. 12SO									43.0	9,800
				Win. WAA12SL									43.0	9,500
				Rem. R12L (see Note 1)									42.5	10,100
			Win. 209	Fed. 12SO									42.5	10,100
4¼	2	1,220	CCI 209M	Fed. 12SO									42.5	10,000
				Win. WAA12SL									42.5	9,800
				Rem. R12L									42.0	10,000
			Win. 209	Fed. 12SO									41.0	9,900
4¼	2¼	1,150	CCI 209M	Fed. 12S4									38.5	11,100
				Win. WAA12F114									38.5	11,100
				Rem. SP12									39.5	11,200
			Win. 209	Fed. 12S4									38.0	10,900

12-Gauge, 3½-in. Remington Plastic SP

Dram Equiv.	Shot Wt. (ounces)	Velocity (fps)	Primer	Wad	Red Dot Grains	Red Dot Approx. psi	Green Dot Grains	Green Dot Approx. psi	Unique Grains	Unique Approx. psi	Herco Grains	Herco Approx. psi	Blue Dot Grains	Blue Dot Approx. psi
4	1⅞	1,200	CCI 209M	Rem. R12L (see Note 1)									38.0	10,300
				Fed. 12SO (see Note 1)									38.0	10,100
				Win. WAA12SL (see Note 1)									38.0	10,000
			Win. 209	Rem. R12L (see Note 1)									37.5	10,500
4¼	1⅞	1,255	CCI 209M	Rem. R12L (see Note 1)									39.0	10,900
				Fed. 12SO (see Note 1)									39.0	10,600
				Win. WAA12SL (see Note 1)									39.0	10,400
			Win. 209	Rem. R12L (see Note 1)									38.5	11,000
4¼	2	1,220	CCI 209M	Rem. R12L									39.5	11,100
				Fed. 12SO									39.5	10,800
				Win. WAA12SL									39.0	10,700
			Win. 209	Rem. R12L									39.0	11,200
4¼	2¼	1,150	CCI 209M	Rem. SP12									38.0	11,100
				Fed. 12S4									37.0	11,100
			Win. 209	Rem. SP12									38.0	11,500

12-Gauge, 3½-in. Winchester Plastic Shells

Dram Equiv.	Shot Wt. (ounces)	Velocity (fps)	Primer	Wad	Red Dot Grains	Red Dot Approx. psi	Green Dot Grains	Green Dot Approx. psi	Unique Grains	Unique Approx. psi	Herco Grains	Herco Approx. psi	Blue Dot Grains	Blue Dot Approx. psi
4	1⅞	1,200	Win 209	Win. WAA12SL									38.5	10,000
				Fed. 12SO									38.5	10,600
				Rem. R12L (see Note 1)									38.5	10,300
			CCI 209M	Win. WAA12SL									38.0	10,100
4¼	1⅞	1,255	Win. 209	Win. WAA12SL									40.0	10,800
				Fed. 12SO									40.5	10,700
				Rem. R12L (see Note 1)									40.0	10,700
			CCI 209M	Win. WAA12SL									39.5	10,500
4¼	2	1,220	Win. 209	Win. WAA12SL									40.0	11,200
				Fed. 12SO									40.5	11,000
				Rem. R12L									39.0	10,600
			CCI 209M	Win. WAA12SL									39.0	11,200
4¼	2¼	1,150	Win. 209	Rem. SP12									37.0	11,200

NOTES: 1. Add one 20-gauge, 0.135-in. thick card wad to the inside bottom of the shot cup.
2. Add two 20-gauge, 0.135-in. thick card wads to the inside bottom of the shot cup.

12-Gauge, 2¾-in. Federal Paper Target Shells

Dram Equiv.	Shot Wt. (ounces)	Velocity (fps)	Primer	Wad	Red Dot Grains	Red Dot Approx. psi	American Select Grains	American Select Approx. psi	Green Dot Grains	Green Dot Approx. psi	Unique Grains	Unique Approx. psi	Herco Grains	Herco Approx. psi	Blue Dot Grains	Blue Dot Approx. psi
3¼	1	1,290	Fed. 209A	Rem. R12L	20.0	9,300			21.5	8,800						
				Fed. 12S3	20.5	9,000			23.5	9,400						
				Fed. 12SO	20.5	10,400			22.5	9,200						
			CCI 209M	Fed. 12S3	21.0	8,700			23.0	7,800						
2¾	1⅛	1,145	Fed 209A	Fed. 12C1	18.0	8,500			19.0	8,200						
				Fed. 12S3	18.0	8,700	19.0	8,200	19.5	7,400						
				Rem. R12L	18.5	9,300			19.0	8,000						
				Rem. RXP12	18.0	8,900			18.5	8,100						
				Win. WAA12 (White)	18.0	8,600	19.0	8,400	18.5	8,000						
				Fiocchi FTW1	18.5	9,000			20.0	7,900						
				Red PC	18.0	8,300			20.0	7,600						
				Lage Uniwad	18.0	8,500			19.0	8,400						
				Hornady Versalite	18.0	8,800	19.0	7,900	19.5	6,900						
				Windjammer	18.5	8,200	19.5	7,100	20.5	6,600						
				Rem. Fig. 8			19.0	7,600								
				Win. WT12 (Orange)			19.0	8,100								
				Claybuster			19.0	7,600								
			Rem. 209P	Fed. 12C1	18.5	8,300			20.0	7,000						
				Fed. 12S3			19.0	8,500								
			Win. 209	Fed. 12C1	18.5	8,600			19.5	7,500						
				Fed. 12S3			19.0	8,900								
			CCI 109	Fed. 12C1	18.5	8,500			19.0	7,800						
			CCI 209M	Fed. 12C1	18.5	7,900			20.0	7,400						
			CCI 209SC	Fed. 12S3			19.0	8,600								
3	1⅛	1,200	Fed. 209A	Fed. 12C1	19.0	9,300			20.0	8,600	22.0	8,200				
				Fed. 12S3	19.0	9,800	20.5	10,400	21.0	7,800	22.0	7,200				
				Rem. R12L	19.5	9,500			20.0	8,600	22.0	7,800				
				Rem. R12H	19.0	9,200			19.5	8,800						
				Rem. RXP12	19.0	9,900			20.0	8,600	21.0	8,000				
				Win. WAA12 (White)	19.0	10,500	20.5	10,400	19.5	9,000	21.0	8,600				
				Fiocchi FTW1	19.5	9,500			21.0	8,200						
				Red PC	19.0	10,300			21.0	8,800	22.5	8,400				
				Lage Uniwad	18.5	9,400			20.0	8,800	22.0	8,000				
				Hornady Versalite	19.0	8,900	20.0	10,100	21.0	8,300	22.0	7,900				
				Windjammer	19.0	8,700	20.0	9,100	22.0	7,700	23.5	7,600				
				Rem. Fig. 8			20.0	9,800								
				Win. WT12 (Orange)			20.5	10,200								
				Claybuster			20.5	9,300								
			Rem. 209P	Fed. 12C1	20.0	9,200			22.0	7,800	24.0	7,000				
				Fed. 12S3			21.0	9,700								
			Win. 209	Fed. 12C1	19.5	9,800			21.0	8,100	23.0	7,600				
				Fed. 12S3			20.5	9,700								
			CCI 109	Fed. 12C1	19.0	9,200			20.5	8,200	22.0	7,500				
			CCI 209M	Fed. 12C1	20.0	8,700			21.5	7,700	24.0	7,200				
			CCI 209SC	Fed. 12S3			20.5	9,800								
3¼	1⅛	1,255	Fed. 209A	Fed. 12C1	21.0	10,200			21.5	7,900	22.5	8,900				
				Fed. 12S3	21.0	9,400			23.0	9,100	23.0	8,300				
				Rem. R12H					21.5	9,900	22.5	9,000				
				Rem. RXP12	21.0	10,000			21.5	9,300	22.0	8,500				
				Win. WAA12 (White)					21.5	10,500	22.0	9,500				
				Red PC	20.5	10,700			22.5	9,600	24.5	8,500				
				Hornady Versalite	20.5	9,900			22.5	8,500	23.0	8,700				
			Rem. 209P	Fed. 12C1	21.5	10,700			23.5	7,500	26.0	7,500				
			Win. 209	Fed. 12C1	21.0	10,300			22.5	9,000	24.5	8,300				
			CCI 209M	Fed. 12C1	21.0	10,500			22.5	8,500	24.5	8,400				
3½	1⅛	1,310	Fed 209A	Fed. 12C1					24.5	9,900	26.5	9,000				
				Fed. 12S3							26.5	9,700				
				Rem. RXP12					24.5	9,800	26.5	8,600				
				Win. WAA12 (White)					24.5	9,700	26.5	9,100				
			Rem. 209P	Fed. 12C1					25.5	9,300	27.5	8,300				
			Win. 209	Fed. 12C1							26.5	9,200				
			CCI 209M	Fed. 12C1							26.5	9,400				

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12-Gauge, 2¾-in. Federal Paper Target Shells (continued)

Dram Equiv.	Shot Wt. (ounces)	Velocity (fps)	Primer	Wad	Red Dot		American Select		Green Dot		Unique		Herco		Blue Dot	
					Grains	Approx. psi	Grains	Approx. psi	Grains	Approx. psi	Grains	Approx. psi	Grains	Approx. psi	Grains	Approx. psi
3¼	1¼	1,220	Fed. 209A	Fed. 12C1					21.0	10,600	22.5	9,500				
				Fed. 12S4					23.0	10,500	24.0	9,800				
				Rem. SP12					21.0	9,600	22.0	9,600				
				Win. WAA12 (White)					21.0	10,500	22.0	10,000				
				Win. WAA12F114					23.0	9,900	23.5	9,500				
				Hornady Versalite					23.0	9,600	23.0	8,800				
			Rem. 209P	Fed. 12S4					23.0	9,900	25.5	9,100				
			Win. 209	Fed. 12S4							24.5	10,600				
			CCI 209M	Fed. 12S4					23.0	10,500	25.5	9,700				
3¾	1¼	1,330	Fed. 209A	Fed. 12S4											37.0	10,300
				Rem. RP12									29.0	9,400		
				Rem. SP12									29.5	9,300		
				Win. WAA12F114									29.5	9,200		
			Win. 209	Fed. 12S4											37.5	10,300
			CCI 209M	Fed. 12S4							28.0	10,700	29.5	9,900	37.0	9,000
3½	1⅜	1,240	Fed. 209A	Rem. SP12											34.0	9,900
				Win. WAA12F114											33.0	10,200
			Rem. 209P	Rem. SP12											36.0	8,300
			Win. 209	Rem. SP12											34.5	9,500
			CCI 209M	Rem. SP12											34.5	9,500
3¾	1⅜	1,295	Fed. 209A	Rem. SP12											35.5	10,300
				Win. WAA12F114											36.5	10,600
			Rem. 209P	Rem. SP12											38.0	8,600
			Win. 209	Rem. SP12											36.5	10,200
			CCI 209M	Rem. SP12											37.0	10,600
4	1⅜	1,350	Fed. 209A	Rem. RP12											37.5	10,700
3¼	1½	1,150	Fed. 209A	Rem. SP12									25.0	10,200		
				Activ T42											31.5	9,100
				Rem. RP12											32.5	8,800
			Win. 209	Activ T42											31.5	9,400
			Rem. 209P	Activ T42											32.5	9,100
			CCI 209M	Activ T42											33.0	9,400
			Fio. 616	Activ T42											32.0	9,500
3½	1½	1,205	Fed. 209A	Rem. RP12											34.0	9,300
			Rem. 209P	Rem. RP12											34.5	10,300
			Win. 209	Rem. RP12											35.0	9,600
			CCI 209M	Rem. RP12											35.0	9,400

PC: Pattern Control

12-Gauge, 2¾-in. Federal Gold Medal Plastic Target Shells

Dram Equiv.	Shot Wt. (ounces)	Velocity (fps)	Primer	Wad	Red Dot Grains	Red Dot Approx. psi	American Select Grains	American Select Approx. psi	Green Dot Grains	Green Dot Approx. psi	Unique Grains	Unique Approx. psi	Herco Grains	Herco Approx. psi	Blue Dot Grains	Blue Dot Approx. psi
—	⅞	1,200	Fed. 209A	Fed. 12SO	17.5	7,600										
				Rem TGT 12	17.5*	7,100										
				Win. WAA12SL	17.0*	7,300										
				Purple PC	17.0*	6,400										
—	⅞	1,250	Fed. 209A	Fed. 12SO	19.0	7,900										
				Rem. TGT 12	18.5*	7,800										
				Win. WAA12SL	18.0*	8,000										
				Purple PC	18.5*	7,300										
—	⅞	1,300	Fed. 209A	Fed. 12SO	19.5	8,400	21.0	7,300	22.0	7,500						
				Rem. TGT 12	19.5*	8,500	21.0	7,400	22.0*	7,200						
				Win. WAA12SL	19.0*	8,400			21.5*	7,600						
				Purple PC	19.5*	7,900	21.5	6,900	22.5*	7,000						
				Claybuster			21.5	6,900								
2¾	1	1,200	Fed. 209A	Fed. 12SO	18.0	8,300	19.5	7,100	20.5	7,600						
				Rem. TGT 12	18.0	7,900	19.5	7,500	20.0	7,000						
				Win. WAA12SL	18.0	8,700	19.5	7,200	20.0	7,800						
				Purple PC	18.0*	7,400			20.5*	7,300						
				Claybuster			20.0	7,300								
3	1	1,255	Fed. 209A	Fed. 12SO	19.5	9,300	21.0	7,700								
				Rem. TGT 12	19.0	8,700	20.5	8,100	21.5	7,900						
				Win. WAA12SL	18.5	9,100	21.0	8,400	21.5	8,500						
				Purple PC	19.5*	8,700			21.5*	8,000						
				Claybuster			21.0	7,600								
3¼	1	1,290	Fed. 209A	Fed. 12SO	20.5	10,300	22.0	8,500								
				Rem. TGT 12	20.0	9,100	21.5	8,800	22.5	8,500						
				Win. WAA12SL	20.0	10,300	21.5	8,800	22.5	9,000						
				Purple PC	20.5	9,300			22.5	8,300						
				Claybuster			21.5	8,000								
2½ Extra Lite	1⅛	1,090	Fed. 209A	Fed. 12S3	17.0	8,400	17.5	7,100	18.5	7,800						
				Rem. Fig. 8	17.0	7,700	17.5*	8,000	18.0	7,000						
				Win. WAA12SL	17.0	8,100			18.0	7,600						
				Win. WAA12 (White)	16.5*	8,500	17.5*	7,400	18.0*	7,700						
				Win. WT12 (Orange)			18.0*	7,700								
				Fiocchi FTW1	16.5*	8,500			18.0*	7,800						
				Hornady Versalite	17.0*	8,600	17.0*	8,100	18.0	7,200						
				Windjammer	17.5	7,600			18.5	6,600						
				Claybuster			17.5	7,100								
			Win. 209	Fed. 12S3	17.0	8,400										
			CCI 209M	Fed. 12S3	17.0	8,300										
			Fio. 616	Fed. 12S3	17.5	8,200										
2¾	1⅛	1,145	Fed. 209A	Fed. 12S3	18.0	8,800	19.0	7,600	19.5	8,100						
				Rem. Fig. 8	18.0	8,800	19.0	9,000	19.0	7,700						
				Rem. RXP12	18.0	9,400			19.0	8,000						
				Win. WAA12SL	18.0	9,200			19.0	8,200						
				Win. WAA12 (White)	17.5*	9,400	19.0*	9,600	19.0*	8,200						
				Win. WT12 (Orange)	18.5*	9,300	19.0*	9,300	20.0*	8,400						
				Fiocchi FTW1	18.0*	9,600			19.5	8,600						
				Hornady Versalite	18.0*	9,400	18.5*	9,600	19.0	8,000						
				Windjammer	18.5	8,200	19.0	8,700	19.5	7,700						
				Claybuster			19.0	8,200								
			Rem. 209P	Fed. 12S3	18.5	8,200	19.5	7,800	20.5	6,800						
			Win. 209	Fed. 12S3	17.5	9,600	19.5	8,100	19.5	8,000						
			CCI 209	Fed. 12S3	18.0	8,200			19.0	7,800						
			CCI 209M	Fed. 12S3	18.0	8,600			19.5	7,500						
			CCI 209SC	Fed. 12S3	19.0	9,800	18.5	8,500	20.5	8,600						
				Win. WAA12 (White)	18.5	10,200			20.5	9,000						
				Rem. Fig. 8	19.5	9,500			21.0	8,300						

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PC: Pattern Control

*NOTES: *For each asterisk (*), add one 20-gauge, 0.135-in. thick card wad to the inside bottom of the shot cup.*
Auto-loading shotguns may not function with loads having pressures less than 7,000 psi. It is important to have tight crimps to prevent load efficiencies (pressures) from dropping. The efficiency may also drop when these loads are fired at low temperatures.
Nitro cards may be obtained from: Ballistic Products, Inc., 20015 75th Avenue North, Corcoran, MN 55340. Phone: (612) 494-9237.

12-Gauge, 2¾-in. Federal Gold Medal Plastic Target Shells (continued)

Dram Equiv.	Shot Wt. (ounces)	Velocity (fps)	Primer	Wad	Red Dot		American Select		Green Dot		Unique		Herco		Blue Dot	
					Grains	Approx. psi	Grains	Approx. psi	Grains	Approx. psi	Grains	Approx. psi	Grains	Approx. psi	Grains	Approx. psi
3	1⅛	1,200	Fed. 209A	Fed. 12S3	19.5	10,000	20.5	9,200	20.0	9,000	22.5	7,300				
				Rem. Fig. 8	19.0	9,500	20.0*	10,300	20.0	8,600	22.5	7,300				
				Rem. RXP12	19.0	9,900			20.0	8,800	22.5	7,800				
				Win. WAA12SL	19.0	10,000			20.0	8,800						
				Win. WAA12 (White)	19.0*	10,400	20.5*	9,400	20.0	9,200	22.5	8,100				
				Fiocchi FTW1	19.0	10,500			20.5	9,300	22.5	8,100				
				Hornady Versalite	19.0	10,100	20.0*	10,900	20.5	9,400	22.0	8,000				
				Windjammer	19.5	9,600	20.5*	9,800	21.0	8,200	22.5	6,900				
				Win. WT12 (Orange)	20.0*	10,400	20.5*	10,400	21.5*	8,800	23.5*	8,300				
				Claybuster			20.5	9,600								
			Rem. 209P	Fed. 12S3	19.5	9,300	21.5	9,000	21.5	7,900	24.0	6,900				
			Win. 209	Fed. 12S3	19.0	10,500	20.5	9,900	20.5	9,000	23.0	8,600				
			CCI 209	Fed. 12S3	20.0	9,800			22.0	9,200	24.0	8,300				
			CCI 209M	Fed. 12S3	19.0	8,900			21.0	8,600	23.5	8,000				
			CCI 209SC	Fed. 12S3	20.5	10,700	20.5	10,000	22.5	8,900						
				Win. WAA12 (White)	20.0	10,500			22.0	10,200						
				Rem. Fig. 8	21.0	9,800			23.0	9,200						
Heavy	1⅛	1,250	Fed. 209A	Fed. 12S3			22.0	10,100	21.5	9,500	23.5	8,100	26.0	8,000		
				Rem. Fig. 8	20.0	9,500			22.0	9,200	23.5	7,800	26.0	7,700		
				Rem. RXP12	20.0	10,100			21.5	9,700	23.5	8,400	26.0	8,000		
				Win. WAA12 (White)					21.5	9,400	23.0	8,400	26.0	8,300		
				Hornady Versalite	20.0	10,700	21.0	10,900	21.5	9,000	24.0	8,300	26.0	8,200		
				Windjammer	20.5	9,500	21.5*	10,700	22.5	8,400	24.0	7,700	26.0	7,400		
				Claybuster			22.0	10,600								
			Rem. 209P	Fed. 12S3					23.0	8,800	25.0	7,600				
			Win. 209	Fed. 12S3					22.5	10,500	24.0	9,800				
			CCI 209M	Fed. 12S3					22.5	9,800	24.0	9,100				
3½	1⅛	1,310	Fed. 209A	Rem. RXP12					24.0	10,400	26.0	10,300				
				Win. WAA12 (White)					23.0	10,400	25.0	9,200				
				Hornady Versalite							25.0	10,000				
				Windjammer					24.0	8,800	25.0	9,700				
3¼	1¼	1,220	Fed. 209A	Fed. 12S4							24.0	10,500	25.0	10,200		
				Rem. SP12							24.0	10,400	26.0	9,700		
				Win. WAA12F114							24.0	10,600	25.0	10,100		
			Rem. 209P	Fed. 12S4							25.0	9,800	25.5	8,100		
			Win. 209	Fed. 12S4							24.0	9,500	25.5	9,400		
			CCI 209M	Fed. 12S4							24.5	9,500	25.5	8,700		
3½	1¼	1,275	Fed. 209A	Fed. 12S4											34.0	8,900
				Rem. SP12									27.0	10,100		
				Win. WAA12F114									27.0	10,500		
			Rem. 209P	Fed. 12S4									27.5	9,200		
			Win. 209	Fed. 12S4											35.0	8,700
			CCI 209M	Fed. 12S4											35.0	9,100
3¾	1¼	1,330	Fed. 209A	Rem. SP12											35.0	10,500
			Win. 209	Rem. SP12											37.0	9,000
			CCI 209M	Rem. SP12											37.5	8,300
3½	1⅜	1,240	Fed. 209A	Rem. RP12											34.0	9,900
				Win. WAA12F114											33.0	10,100
			Win. 209	Rem. RP12											34.5	8,600
			CCI 209M	Rem. RP12											35.0	8,600
			Rem. 209P	Rem. RP12											36.0	7,800
3¾	1⅜	1,295	Fed. 209A	Rem. RP12											35.5	10,700
			Rem. 209P	Rem. RP12											39.0	8,600
			Win. 209	Rem. RP12											36.0	9,200
			CCI 209M	Rem. RP12											36.5	9,000
3¼	1½	1,150	Fed. 209A	Rem. RP12									25.5	10,100	33.5	8,300
			Win. 209	Activ T42											32.5	9,200
			Rem. 209P	Activ T42											32.5	9,300
			CCI 209M	Activ T42											32.5	9,400
			Fio. 616	Activ T42											32.0	9,700
3½	1½	1,205	Fed. 209A	Rem. RP12											34.0	9,700
			Rem. 209P	Rem. RP12											35.5	8,100
			CCI 209M	Rem. RP12											34.0	9,400
			Win. 209	Rem. RP12											34.5	9,900

12-Gauge, 2¾-in. Federal Hi Power Plastic Shells with Rolled Paper Base Wad

Dram Equiv.	Shot Wt. (ounces)	Velocity (fps)	Primer	Wad	Red Dot Grains	Red Dot Approx. psi	Green Dot Grains	Green Dot Approx. psi	Unique Grains	Unique Approx. psi	Herco Grains	Herco Approx. psi	Blue Dot Grains	Blue Dot Approx. psi
3¼	1	1,290	Fed. 209A	Fed. 12S3	21.0	9,400	23.0	7,500						
				Rem. R12L	20.5	8,500	22.5	7,400						
2¾	1⅛	1,145	Fed. 209A	Fed. 12S3	18.5	7,300	20.0	7,200						
				Rem. RXP12	18.5	8,700	19.0	8,700						
				Win. WAA12 (White)	18.5	9,600	18.5	9,100						
				Hornady Versalite	18.5	8,300	19.5	7,100						
			Rem. 209P	Fed. 12S3	18.5	8,400	21.0	6,700						
			Win. 209	Fed. 12S3	18.5	9,100	20.0	8,200						
			CCI 209M	Fed. 12S3	18.5	8,600	20.0	7,600						
3	1⅛	1,200	Fed. 209A	Fed. 12C1			20.5	9,400						
				Fed. 12S3	19.0	9,300	21.0	8,000	23.0	7,700				
				Rem. RXP12	19.5	9,300	20.5	9,100	22.0	8,100				
				Win. WAA12 (White)	19.0	9,800	20.0	9,300	21.0	7,700				
				Hornady Versalite	19.5	9,000	20.0	8,800	22.5	8,000				
			Rem. 209P	Fed. 12S3	20.0	9,200	22.0	7,600						
			Win. 209	Fed. 12S3	19.5	9,500	21.5	8,900	23.5	8,100				
			CCI 209M	Fed. 12S3	20.0	9,300	21.5	8,600	24.0	7,700				
3¼	1⅛	1,255	Fed. 209A	Fed. 12C1	21.0	10,200	22.0	10,100						
				Fed. 12S3	21.5	10,100	22.0	9,000	24.0	8,100				
				Rem. RXP12	21.0	9,800	22.5	10,000	23.0	8,100				
				Win. WAA12 (White)			22.0	10,300	23.0	8,600				
				Hornady Versalite	20.5	9,700	23.5	8,600	23.5	8,200				
			Rem. 209P	Fed. 12S3	22.0	10,300	23.0	8,500						
			Win. 209	Fed. 12S3	21.5	10,700	23.0	9,400	25.0	9,100				
			CCI 209M	Fed. 12S3	21.5	10,100	22.0	9,600	25.5	8,400				
3¼	1¼	1,220	Fed. 209A	Fed. 12C1					23.0	9,000				
				Fed. 12S4			23.0	9,800	23.0	9,500				
				Rem. R12H			22.0	10,500						
				Rem. RXP12			22.0	9,600	23.0	8,300				
				Win. WAA12 (White)			21.5	9,500	23.0	9,600				
				Win. WAA12F114			23.0	9,900	23.0	9,400				
				Hornady Versalite			23.0	9,700	23.5	8,800				
			Rem. 209P	Fed. 12S4					25.5	9,000				
			Win. 209	Fed. 12S4					25.0	9,500				
			CCI 209M	Fed. 12S4					25.0	10,000				
3¾	1¼	1,330	Fed. 209A	Fed. 12C1					25.5	10,200	28.5	9,800		
				Fed. 12S4							29.0	10,200		
				Rem. SP12					25.5	10,200	28.5	9,900		
				Win. WAA12 (White)							29.0	10,500		
				Win. WAA12F114							29.5	9,400		
			Win. 209	Fed. 12S4							30.0	10,200	38.0	8,600
			CCI 209M	Fed. 12S4							30.0	9,500	38.0	9,800
3¾	1⅜	1,295	Fed. 209A	Rem. RP12									38.5	8,600
				Rem. SP12									38.0	9,000
				Win. WAA12 (White)									37.5	8,500
				Win. WAA12F114									37.5	9,100
			Rem. 209P	Rem. RP12									39.0	8,400
			Win. 209	Rem. RP12									39.0	9,400
			CCI 209M	Rem. RP12									39.0	8,500
4	1⅜	1,350	Fed. 209A	Rem. RP12									39.5	9,700
			Win. 209	Rem. RP12									40.0	9,600
			CCI 209M	Rem. RP12									39.5	9,600
3¼	1½	1,150	Fed. 209A	Rem. SP12							26.5	8,900		
				Activ T42									32.5	9,100
				Rem. RP12									33.5	8,400
			Win. 209	Activ T42									32.5	9,500
			Rem. 209P	Activ T42									33.0	8,800
			CCI 209M	Activ T42									33.5	7,900
			Fio. 616	Activ T42									32.5	9,500
3½	1½	1,205	Fed. 209A	Rem. RP12									34.5	8,500
			CCI 209M	Rem. RP12									35.0	8,700
			Win. 209	Rem. RP12									34.5	8,600
3¾	1½	1,260	Fed 209A	Rem. RP12									36.0	9,500
				Rem. SP12									37.0	9,600
			Win. 209	Rem. RP12									37.0	9,900
			CCI 209M	Rem. RP12									37.0	9,500

12-Gauge, 2¾-in. Federal One-Piece Plastic Shells

Dram Equiv.	Shot Wt. (ounces)	Velocity (fps)	Primer	Wad	Green Dot		Unique		Herco		Blue Dot	
					Grains	Approx. psi	Grains	Approx. psi	Grains	Approx. psi	Grains	Approx. psi
3¼	1¼	1,220	Fed. 209A	Fed. 12S4			25.0	9,100	26.0	8,400		
				Rem. SP12			25.5	8,700	26.5	7,800		
				Win. WAA12F114			25.0	8,700	26.0	8,000		
			Rem. 209	Fed. 12S4			25.5	8,800	26.5	9,100		
			Win. 209	Fed. 12S4			25.0	9,200	26.0	8,500		
			CCI 209M	Fed. 12S4			25.5	9,200	26.0	8,900		
3½	1¼	1,275	Fed. 209A	Fed. 12S4					28.0	9,500		
				Rem. SP12					27.5	8,200		
				Win. WAA12F114					27.5	8,700		
			Rem. 209	Fed. 12S4					28.5	9,400		
			Win. 209	Fed. 12S4					27.5	9,000		
			CCI 209M	Fed. 12S4					27.5	9,500		
3¾	1¼	1,330	Fed. 209A	Fed. 12S4							38.5	8,500
				Win. WAA12F114							39.0	7,700
			Win. 209	Fed. 12S4							39.0	8,400
			CCI 209M	Fed. 12S4							37.5	9,000
3½	1⅜	1,240	Fed. 209A	Rem. SP12							37.0	8,100
				Win. WAA12F114							38.0	7,900
			Win. 209	Rem. SP12							37.5	7,700
			CCI 209M	Rem. SP12							37.5	8,300
3¾	1⅜	1,295	Fed. 209A	Rem. RP12							38.5	8,700
			Rem. 209	Rem. RP12							38.5	9,500
			Win. 209	Rem. RP12							38.5	9,300
			CCI 209M	Rem. RP12							38.0	9,200
3¼	1½	1,150	Fed. 209A	Fed. 12S4					27.0	9,200		
				Rem. SP12					27.0	8,600		
				Win. WAA12F114					26.5	8,700		
				Activ T35					26.5	8,500		
			Win. 209	Fed. 12S4					26.5	10,100		
			Rem. 209P	Fed. 12S4					26.5	9,900		
			CCI 209M	Fed. 12S4					26.5	10,000		
			Fio. 616	Fed. 12S4					26.0	10,100		
3½	1½	1,205	Fed. 209A	Rem. RP12							36.0	8,800
			Rem. 209	Rem. RP12							36.0	8,100
			Win. 209	Rem. RP12							37.0	8,500
			CCI 209M	Rem RP12							36.0	8,500
			Fed. 209A	Rem. RP12							38.0	9,900
3¾	1½	1,260	Rem. 209	Rem. RP12							38.0	8,700
			Win. 209	Rem. RP12							38.0	9,100
			CCI 209M	Rem. RP12							38.0	10,000
3¼	1⅝	1,115	Fed. 209A	Rem. SP12					26.5	10,000		
			Win. 209	Rem. SP12					26.5	9,800		
			Rem. 209P	Rem. SP12					26.5	9,500		
			CCI 209M	Rem. SP12					26.5	10,000		
			Fio. 616	Rem. SP12					26.0	10,300		

12-Gauge, 3-in. Federal Hi Power Plastic Shells with Rolled Paper Base Wad

Dram Equiv.	Shot Wt. (ounces)	Velocity (fps)	Primer	Wad	Herco Grains	Herco Approx. psi	Blue Dot Grains	Blue Dot Approx. psi
3¾	1⅜	1,295	Fed. 209A	Fed. 12S3	30.5	10,000		
				Rem. RXP12	30.5	9,300	38.0	9,000
				Win. WAA12 (White)	30.5	9,700	38.0	8,800
4	1⅜	1,350	Fed. 209A	Fed. 12S4			40.0	9,400
				Rem. SP12			40.0	8,900
				Win. WAA12F114			40.0	9,800
4	1½	1,315	Fed. 209A	Fed. 12S3			38.0	9,700
				Rem. RXP12			38.5	9,600
				Win. WAA12 (White)			37.5	9,800
				Activ TG30			38.0	9,400
4	1⅝	1,280	Fed. 209A	Rem. SP12			39.0	10,400
4	1¾	1,245	Fed. 209A	Rem. RP12			39.0	10,500
3¾	1⅞	1,155	Fed. 209A	Rem. SP12			36.0	10,300
				Rem. RP12			34.0	10,500
				Activ T35			34.5	10,100

12-Gauge, 3-in. Federal One-Piece Plastic Shells

Dram Equiv.	Shot Wt. (ounces)	Velocity (fps)	Primer	Wad	Green Dot Grains	Green Dot Approx. psi	Unique Grains	Unique Approx. psi	Herco Grains	Herco Approx. psi	Blue Dot Grains	Blue Dot Approx. psi
3¾	1⅜	1,295	Fed. 209A	Fed. 12S3					31.0	10,500	40.5	7,900
				Rem. RXP12					32.0	10,100		
				Win. WAA12 (White)							38.0	9,800
4	1⅜	1,350	Fed. 209A	Rem. RXP12							42.0	8,000
				Win. WAA12 (White)							44.0	9,900
4	1½	1,315	Fed. 209A	Fed. 12S4							40.0	9,700
				Rem. SP12							40.0	9,000
				Win. WAA12F114							42.0	9,800
4	1⅝	1,280	Fed. 209A	Fed. 12S4							40.0	10,100
				Rem. SP12							40.0	9,400
				Win. WAA12F114							40.0	10,000
4	1¾	1,245	Fed. 209A	Rem. RP12							39.0	10,500
3¾	1⅞	1,155	Fed. 209A	Rem. SP12							36.5	9,900
				Activ T35							35.5	9,300

12-Gauge, 2¾-in. Remington Premier Plastic Target Shells

Dram Equiv.	Shot Wt. (ounces)	Velocity (fps)	Primer	Wad	Red Dot Grains	Red Dot Approx. psi	American Select Grains	American Select Approx. psi	Green Dot Grains	Green Dot Approx. psi	Unique Grains	Unique Approx. psi	Herco Grains	Herco Approx. psi	Blue Dot Grains	Blue Dot Approx. psi
—	⅞	1,200	Rem. 209P	Rem. TGT 12	17.0*	6,800										
				Fed. 12SO	17.0	7,200										
				Win. WAA12SL	17.0*	7,000										
				Purple PC	17.5*	6,800										
—	⅞	1,250	Rem. 209P	Rem. TGT 12	18.5*	7,100										
				Fed. 12SO	18.0	7,800										
				Win. WAA12SL	18.5*	7,800										
				Purple PC	18.5*	6,900										
—	⅞	1,300	Rem. 209P	Rem. TGT 12	20.5	8,200	20.5	7,000	22.0	7,100						
				Fed. 12SO	20.0	8,100	20.5	7,700	22.0	8,000						
				Win. WAA12SL	20.5	8,000	20.5	7,900	21.5	7,900						
				Purple PC	20.0	7,500										
				Claybuster			20.5	6,900								
2¾	1	1,200	Rem. 209P	Rem. TGT 12	18.0	8,700	19.0	7,000	20.0	8,200						
				Fed. 12SO	18.0	9,000	19.5	7,900	19.5	8,600						
				Win. WAA12SL	18.0	9,600	19.0	7,600	19.5	8,600						
				Purple PC	18.5	8,300			20.5	7,000						
				Claybuster			19.5	7,500								
3	1	1,255	Rem. 209P	Rem. TGT 12	19.0	9,500	20.5	8,000	21.0	8,500						
				Fed. 12SO	19.5	10,600	20.5	8,600	21.5	9,300						
				Win. WAA12SL	19.5	10,100	20.5	8,700	21.5	8,900						
				Purple PC	19.5	8,900			21.5	8,500						
				Claybuster			20.5	8,000								
3¼	1	1,290	Rem. 209P	Rem. Fig. 8	21.5	9,100			22.0	8,100						
				Rem. TGT 12	21.0	10,700	22.5	8,700	22.5	8,400						
				Rem. R12L	20.5	9,900										
				Win. WAA12F1	20.5	9,100			23.0	7,200						
				Win. WAA12SL	20.5	10,400	21.5	9,200	22.5	9,000						
				Fed. 12SO	20.0	10,500	21.5	9,900	22.0	8,700						
				Purple PC	20.5	9,100			22.5	8,200						
				Claybuster			22.5	8,500								
			Fed. 209	Rem. R12L	20.5	10,500			22.5	9,200						
			Win. 209	Rem. R12L	20.0	10,100			22.0	8,700						
			CCI 209M	Rem. R12L	20.0	10,300			22.0	9,100						
2½ Extra Lite	1⅛	1,090	Rem. 209P	Rem. Fig. 8	16.5	8,300	17.5	7,100								
				Rem. RXP12	16.0	8,700	17.0	7,500								
				Fed. 12S3	16.0	10,300	17.5	8,200								
				Win. WAA12 (White)	16.0	9,400										
				Win. WT12 (Orange)			17.0	7,300								
				Fiocchi FTW1	16.5	8,500										
				Windjammer	16.5	7,900	18.0	6,900								
				Red PC	16.5	8,700	17.5	7,000								
				Claybuster			17.5	6,900								
			Fed. 209	Rem. Fig. 8	16.0	9,800										
			Win. 209	Rem. Fig. 8	16.5	8,900										
			CCI 209M	Rem. Fig. 8	16.5	9,100			18.0	8,400						
				Rem. RXP12	16.0	9,300			17.5	8,600						
				Fed. 12S3	16.0	10,100			17.5	8,500						
				Win. WAA12 (White)	16.0	9,800			17.0	8,700						
				Fiocchi FTW1	16.5	9,700			17.5	8,500						
				Windjammer	16.5	8,300			18.0	7,600						
				Red PC	16.5	9,200			18.0	7,400						
			Fio. 616	Rem. Fig. 8	16.5	9,000										
2¾	1⅛	1,145	Rem. 209P	Rem. Fig. 8	18.0	9,200	19.0	7,600	19.0	7,300						
				Fed. 12S3	18.0	10,100	18.5	9,100	19.0	8,800						
				Rem. RXP12	17.5	8,900	18.5	8,300	19.0	7,700						
				Win. WAA12 (White)	17.0	10,100			19.0	6,700						
				Win. WT12 (Orange)	18.5*	8,800	18.5*	8,900	19.5*	7,900						
				Fiocchi FTW1	17.5	9,700			19.5	8,800						
				Windjammer	17.5	8,900	19.0	7,900	19.5	7,800						
				Red PC	17.5	9,000	19.0	8,200	19.0	7,600						
				Lage Uniwad	17.5	9,900			19.0	8,000						
				Hornady Versalite	17.5	9,000			19.0	8,000						
				Claybuster			19.0	8,400								

*NOTE: *For each asterisk(*), add one 20-gauge, 0.135 in. thick card wad to the inside bottom of the shot cup.*

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12-Gauge, 2¾-in. Remington Premier Plastic Target Shells (continued)

Dram Equiv.	Shot Wt. (ounces)	Velocity (fps)	Primer	Wad	Red Dot Grains	Red Dot Approx. psi	American Select Grains	American Select Approx. psi	Green Dot Grains	Green Dot Approx. psi	Unique Grains	Unique Approx. psi	Herco Grains	Herco Approx. psi	Blue Dot Grains	Blue Dot Approx. psi
2¾	1⅛	1,145	Fed. 209A	Rem. Fig. 8	16.5	10,300	18.5	9,200	19.5	10,100						
				Rem. RXP12	16.0	10,600			19.5	10,500						
				Fed. S3	16.5	10,100			19.0	9,900						
				Red PC	17.0	10,700			19.5	10,000						
				Windjammer	17.5	10,500			20.0	9,600						
			Win. 209	Rem. Fig. 8	18.0	9,500	18.5	9,000	19.0	8,100						
			CCI 209M	Rem. Fig. 8	17.5	9,300			19.0	8,800						
				Rem. RXP12	17.0	9,600			19.0	9,100						
				Fed. 12S3	17.5	10,600			19.0	8,900						
				Win. WAA12 (White)	16.5	10,200			19.0	9,400						
				Fiocchi FTW1	17.0	9,900			19.5	9,300						
				Windjammer	17.0	9,000			19.5	7,900						
				Red PC	17.0	9,400			19.0	7,700						
				Hornady Versalite	17.0	9,100			19.0	8,000						
			CCI 209	Rem. Fig. 8	17.5	8,600			19.5	7,100						
			CCI 209SC	Rem. Fig. 8	18.0	10,400	18.5	8,900	20.5	9,900						
				Fed. 12S3	18.5	10,400			19.5	9,500						
				Win. WAA12 (White)					20.0	10,600						
				Windjammer	18.5	9,800										
			Fio. 616	Rem. Fig. 8	17.5	8,900			19.0	7,800						
3	1⅛	1,200	Rem. 209P	Rem. Fig. 8	19.0	10,100	20.5	9,100	21.0	8,800	22.5	8,200				
				Rem. RXP12	19.0	10,000	20.5	10,200	20.5	8,700	22.5	8,300				
				Fed. 12S3			20.0	10,600	20.5	9,700	22.0	9,100				
				Win. WAA12 (White)					21.0	8,900	22.0	8,900				
				Win. WT12 (Orange)	19.5*	10,700	20.0*	10,600	21.5*	8,700	23.5*	8,300				
				Fiocchi FTW1	18.5	10,700			20.5	9,900						
				Windjammer	18.5	9,400	20.5	9,100	20.5	8,200	23.5	7,000				
				Red PC	19.5	10,100	20.5	9,700	21.0	8,500	22.5	7,800				
				Hornady Versalite					20.0	8,700	22.0	7,900				
				Claybuster			20.0	9,500								
			Fed. 209A	Rem. Fig. 8	17.0	10,400	20.0	10,700	20.5	10,500	23.0	9,200				
				Rem. RXP12	17.0	10,100			21.0	10,400	22.0	9,100				
			Win. 209	Rem. Fig. 8	19.0	10,400	20.0	10,200	20.0	8,600	22.5	8,400				
			CCI 209M	Rem. Fig. 8	18.5	10,400			20.0	9,300	22.5	9,500				
				Rem. RXP12	18.5	10,500			20.5	9,200	22.5	9,500				
				Fed. 12S3					20.5	10,200	22.0	9,700				
				Win. WAA12 (White)					21.0	9,600	22.0	9,300				
				Fiocchi FTW1	18.5	10,600			20.5	9,700						
				Windjammer	18.5	9,700			20.5	8,700	23.5	8,200				
				Red PC	19.0	10,400			20.5	9,000	22.5	8,700				
				Hornady Versalite	19.0	10,400			20.0	9,200	22.0	8,800				
			CCI 209	Rem. Fig. 8	19.5	9,900			21.0	8,700	22.5	8,500				
			CCI 209SC	Rem. Fig. 8			20.0	10,300	21.0	10,600						
				Fed. 12S3					20.0	10,600						
				Windjammer					22.0	10,400						
			Fio. 616	Rem. Fig. 8	19.5	10,600			20.0	8,700	23.0	8,500				
Heavy	1⅛	1,250	Fed. 209	Rem. RXP12					22.0	10,500	24.0	10,100				
			Win. 209	Rem. RXP12					22.0	9,400	24.5	8,800				
			CCI 209M	Rem. RXP12					22.0	9,600	24.0	10,400	24.5	9,800		
				Fed. 12S3					21.5	10,600	23.5	10,200	24.5	9,900		
				Win. WAA12 (White)					22.5	10,700	24.0	10,300	24.5	10,400		
				Windjammer					22.0	9,400	25.0	9,300	25.0	9,400		
				Red PC					22.0	9,600	24.0	9,400	25.0	9,500		
				Hornady Versalite					21.5	10,200	23.5	9,900	24.5	9,900		
			Fio. 616	Rem. RXP12					22.0	9,100	23.5	9,100				
			Rem. 209P	Rem. RXP12			21.0	10,500								
				Rem. Fig. 8			21.5	9,900								
				Claybuster			21.5	10,600								
3½	1⅛	1,310	Rem. 209P	Rem. RXP12							24.5	9,700	27.5	8,400		
				Win. WAA12 (White)							25.0	10,500	27.0	8,800		
				Windjammer							26.5	8,600	28.5	8,600		
				Hornady Versalite							25.5	9,900	27.0	8,800		
				Activ T32							25.0	9,900	27.0	9,600		
			Fed. 209	Rem. RXP12									27.0	9,200		
			Win. 209	Rem. RXP12							26.0	9,800	27.0	9,500		
			CCI 209M	Rem. RXP12							25.0	10,000	26.5	9,700		
			Fio. 616	Rem. RXP12							26.0	9,900	27.5	9,300		

*NOTE: *For each asterisk(*), add one 20-gauge, 0.135 in. thick card wad to the inside bottom of the shot cup.*

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12-Gauge, 2¾-in. Remington Premier Plastic Target Shells (continued)

Dram Equiv.	Shot Wt. (ounces)	Velocity (fps)	Primer	Wad	Red Dot Grains	Red Dot Approx. psi	American Select Grains	American Select Approx. psi	Green Dot Grains	Green Dot Approx. psi	Unique Grains	Unique Approx. psi	Herco Grains	Herco Approx. psi	Blue Dot Grains	Blue Dot Approx. psi
3¼	1¼	1,220	Rem. 209P	Rem. SP12							23.5	9,300	25.0	9,600		
				Fed. 12S4							23.0	10,700	25.0	10,400		
				Win. WAA12F114							24.0	10,100	24.5	9,300		
				Hornady Versalite							23.5	9,400	25.0	8,400		
				Activ T32							23.5	9,400	25.0	8,800		
			Fed. 209	Rem. SP12							23.0	9,900	25.0	9,800		
			Win. 209	Rem. SP12							23.5	10,000	24.5	9,600		
			CCI 209M	Rem. SP12							23.5	10,300	24.5	10,000		
			Fio. 616	Rem. SP12							23.0	9,600	24.5	9,300		
3½	1¼	1,275	Rem. 209P	Rem. SP12											34.5	8,600
				Fed. 12S4											34.0	10,100
				Win. WAA12F114									26.5	10,500		
				Activ T35									27.0	9,900	35.0	8,500
			Fed. 209	Rem. SP12											35.0	9,100
			Win. 209	Rem. SP12									26.0	10,600	35.5	9,100
			CCI 209M	Rem. SP12											34.5	9,800
			Fio. 616	Rem. SP12											35.5	9,300
3¾	1¼	1,330	Rem. 209P	Rem. SP12											37.5	9,700
			Fed. 209	Rem. SP12											36.5	9,700
			Win. 209	Rem. SP12											36.5	9,900
			CCI 209M	Rem. SP12											35.5	10,300
			Fio. 616	Rem. SP12											35.5	9,900
3½	1⅜	1,240	Rem. 209P	Rem. SP12											35.0	9,300
				Activ T35											34.0	9,300
			Fed. 209	Rem. SP12											35.0	9,100
			Win. 209	Rem. SP12											35.0	9,100
			CCI 209M	Rem. SP12											34.0	9,400
			Fio. 616	Rem. SP12											34.0	9,100
3¾	1⅜	1,295	Rem. 209P	Rem. SP12											37.5	10,300
				Rem. RP12											36.5	9,900
			Fed. 209	Rem. RP12											35.5	10,500
			Win. 209	Rem. RP12											35.5	10,500
			CCI 209M	Rem. RP12											35.5	10,400
			Fio. 616	Rem. RP12											35.5	10,000
3¼	1½	1,150	Rem. 209P	Rem. RP12											31.0	9,900
				Activ T42											30.5	10,400
			Fed. 209	Rem. RP12											31.0	9,900
			Win. 209	Rem. RP12											31.5	10,100
			CCI 209M	Rem. RP12											31.0	9,900
			Fio. 616	Rem. RP12											31.0	9,800
3½	1½	1,205	Rem. 209P	Rem. RP12											33.0	10,200
				Activ T42											31.5	10,600
			Fed. 209	Rem. RP12											33.0	10,300
			Win. 209	Rem. RP12											33.0	10,200
			CCI 209M	Rem. RP12											33.0	10,100
			Fio. 616	Rem. RP12											33.0	10,100

PC: Pattern Control

12-Gauge, 2¾-in. Remington-Peters Unibody SP Plastic Shells

Dram Equiv.	Shot Wt. (ounces)	Velocity (fps)	Primer	Wad	Red Dot Grains	Red Dot Approx. psi	Green Dot Grains	Green Dot Approx. psi	Unique Grains	Unique Approx. psi	Herco Grains	Herco Approx. psi	Blue Dot Grains	Blue Dot Approx. psi
3¼	1	1,290	Rem. 209	Rem. R12L			22.0	9,200						
				Rem. RXP12			21.5	9,900						
				Win. WAA12F1			21.0	9,900						
			CCI 209	Rem. R12L	21.0	9,700	23.5	8,100						
			CCI 209M	Rem. R12L	20.0	10,600	22.5	8,100						
			Fed. 209	Rem. R12L	19.5	10,400	22.0	9,600						
			Win. 209	Rem. R12L	20.0	10,700	21.5	8,800						
2¾	1⅛	1,145	Rem. 209	Rem. RXP12			19.0	8,800						
				Rem. R12H	17.5	9,300	19.0	8,500						
				Fed. 12S3	17.0	10,100	19.0	9,200						
				Win. WAA12 (White)	17.0	10,200	17.5	10,000						
				Hornady Versalite	17.0	8,800	18.0	8,500						
			CCI 209	Rem. RXP12	18.0	10,100	18.5	9,200						
			CCI 209M	Rem. RXP12	17.0	10,200	18.5	9,100						
			Fed. 209	Rem. RXP12	17.5	10,500	18.0	9,200						
			Win. 209	Rem. RXP12	17.0	10,500	18.5	8,800						
3	1⅛	1,200	Rem. 209	Rem. RXP12	18.0	10,500	20.0	9,800	22.0	9,100				
				Rem. R12H	18.0	10,000	19.5	9,400	21.5	8,300				
				Fed. 12S3					21.5	8,800				
				Win. WAA12 (White)			19.5	10,000	21.5	8,400				
				Hornady Versalite	18.0	10,000	19.0	9,900	21.0	8,200				
				Windjammer	18.5	9,600	20.5	8,300	22.0	7,700				
			Fed. 209	Rem. RXP12	18.0	10,100	20.0	9,200	22.0	8,100				
			CCI 209	Rem. RXP12			21.0	8,800	23.0	8,300				
			CCI 209M	Rem. RXP12			20.0	10,000	22.0	8,800				
			Win. 209	Rem. RXP12			20.5	9,800	22.0	8,900				
3¼	1⅛	1,255	Rem. 209	Rem. RXP12			20.5	10,300	22.5	9,200				
				Rem. R12H			21.0	10,400	22.5	8,300				
				Fed. 12S3					22.5	9,800				
				Win. WAA12 (White)					22.5	9,200				
			Rem. 97★	Rem. RXP12			21.0	10,600						
				Rem. R12H			21.0	10,100						
			Fed. 209	Rem. RXP12			20.5	10,200	23.0	10,000				
			CCI 209	Rem. RXP12			22.5	10,500	23.0	8,800				
			CCI 209M	Rem. RXP12			21.0	10,100	23.0	9,700				
			Win. 209	Rem. RXP12			21.5	10,700	23.5	9,800				
3½	1⅛	1,310	Rem. 209	Rem. RXP12					24.0	10,000	25.5	10,200		
				Rem. R12H					24.5	10,100	25.5	10,100		
				Win. WAA12 (White)					24.0	10,300	24.5	10,200		
			Fed. 209	Rem. R12H							25.5	10,700		
			CCI 209	Rem. R12H					25.5	9,600	27.0	9,300		
			CCI 209M	Rem. R12H					25.0	10,700	26.5	10,300		
			Win. 209	Rem. R12H					25.0	10,700	26.5	10,700		
3¼	1¼	1,220	Rem. 209	Rem. SP12					22.5	9,700	23.5	9,400		
				Win. WAA12F114							23.0	10,100	30.0	10,300
			Fed. 209	Rem. SP12					22.5	10,700	23.5	10,400	31.5	10,000
			CCI 209	Rem. SP12					24.5	9,600	25.5	9,100		
			CCI 209M	Rem. SP12					23.0	10,100			32.0	8,500
			Win. 209	Rem. SP12					23.0	10,600	24.5	10,500	33.0	9,000
3½	1¼	1,275	Rem. 209	Rem. SP12									32.0	10,200
				Win. WAA12F114									32.0	10,000
			Fed. 209	Rem. SP12									32.5	10,600
			CCI 209	Rem. SP12									35.5	8,900
			CCI 209M	Rem. SP12									33.5	9,800
			Win. 209	Rem. SP12									35.0	10,300
3¾	1¼	1,330	CCI 209	Rem. RP12									37.5	9,700
			CCI 209M	Rem. RP12									35.5	10,400
3½	1⅜	1,240	CCI 209	Rem. RP12									36.0	10,100
			CCI 209M	Rem. RP12									32.5	10,500
3¼	1½	1,150	Rem. 209P	Rem. RP12									32.5	8,000
				Activ T42									31.5	9,600
			Fed. 209	Rem. RP12									31.5	9,100
			Win. 209	Rem. RP12									32.0	8,300
			CCI 209M	Rem. RP12									32.0	8,400
			Fio. 616	Rem. RP12									31.5	9,200
3¼	1⅝	1,115	Rem. 209P	Activ T42									29.5	10,500
			Fed. 209A	Activ T42									29.0	10,400
			Win. 209	Activ T42									29.5	10,400
			CCI 209M	Activ T42									29.5	10,300
			Fio. 616	Activ T42									29.5	10,400

12-Gauge, 3-in. Remington-Peters SP Plastic Shells with Separate Plastic Base Wad

Dram Equiv.	Shot Wt. (ounces)	Velocity (fps)	Primer	Wad	Red Dot Grains	Red Dot Approx. psi	Green Dot Grains	Green Dot Approx. psi	Unique Grains	Unique Approx. psi	Herco Grains	Herco Approx. psi	Blue Dot Grains	Blue Dot Approx. psi
3¾	1⅜	1,295	CCI 209M	Rem. RXP12* Fed. 12S3 Win. WAA12 (White)*							30.0 29.5 30.0	9,200 10,000 10,000		
4	1⅜	1,350	CCI 209M	Rem. RXP12 Fed. 12S3 Win. WAA12 (White)									42.5 42.0 42.0	8,000 8,400 8,500
4	1½	1,315	CCI 209M	Rem. SP12* Fed. 12S4* Win. WAA12F114*									40.0 39.5 39.5	9,400 9,800 9,800
4	1⅝	1,280	CCI 209M	Rem. SP12 Fed. 12S4 Win. WAA12F114									39.0 38.5 38.5	9,800 10,200 10,500
4	1¾	1,245	CCI 209M	Rem. RP12 Activ T35									38.5 37.5	10,700 10,400
3¾	1⅞	1,155	CCI 209M	Rem. RP12 Activ T35									34.0 34.0	10,300 10,100

*NOTE: *For each asterisk(*), add one 20-gauge, 0.135-in. thick card wad to the inside bottom of the shot cup.*

12-Gauge, 3-in. Remington-Peters Unibody SP Plastic Shells

Dram Equiv.	Shot Wt. (ounces)	Velocity (fps)	Primer	Wad	Herco Grains	Herco Approx. psi	Blue Dot Grains	Blue Dot Approx. psi	2400 Grains	2400 Approx. psi
3¾	1⅜	1,295	Win. 209	Rem. RXP12 Fed. 12S3 Win. WAA12SL Win. WAA12 (White) Activ TG30					37.5 37.0 35.5 36.5 36.5	9,200 9,300 10,100 9,400 9,200
4	1⅜	1,350	Win. 209	Rem. RXP12 Fed. 12S4 Win. WAA12F114 Activ T32					38.5 38.0 38.0 38.5	9,900 10,200 10,500 9,800
4	1½	1,315	CCI 209M	Rem. SP12					37.5	10,700

Additional 12-Gauge, 2¾-in., ⅞-oz. Target Loads‡

Shell	Velocity (fps)	Primer	Wad	Bullseye Grains	Bullseye Approx. psi	Red Dot Grains	Red Dot Approx. psi	American Select Grains	American Select Approx. psi	Green Dot Grains	Green Dot Approx. psi
Federal Paper Target	1,200	Fed. 209	Fed. 12SO Win. WAA12F1 Rem. PT12	17.5 17.5* 17.5*	4,500 4,600 5,100	17.5 17.5 17.5	5,700 4,800 5,000				
Federal Gold Medal	1,200	Fed. 209	Fed. 12SO Win. WAA12F1 Rem. PT12	17.0** 17.0** 17.5**	6,300 5,800 5,500	18.0 18.0* 18.0*	6,200 5,700 6,400				
Win. Western AA-Type	1,200	Win. 209	Win. WAA12F1 Fed. 12SO Rem. PT12	16.5* 16.5 16.5*	6,700 7,400 7,100	16.5 16.0* 16.5*	7,300 8,000 7,300				

*NOTES: *For each asterisk (*), add one 20-gauge, 0.135-in. thick card wad to the inside bottom of the shot cup.*
‡Auto-loading shotguns may not function with loads having pressures less than 7,000 psi.

It is important to have tight crimps to prevent load efficiencies (pressures) from dropping. The efficiency may also drop when these loads are fired at low temperatures.

12-Gauge, 2¾-in. Winchester Plastic AA Shells

Dram Equiv.	Shot Wt. (ounces)	Velocity (fps)	Primer	Wad	Red Dot Grains	Red Dot Approx. psi	American Select Grains	American Select Approx. psi	Green Dot Grains	Green Dot Approx. psi	Unique Grains	Unique Approx. psi	Herco Grains	Herco Approx. psi	Blue Dot Grains	Blue Dot Approx. psi
—	⅞	1,200	Win. 209	Win. WAA12SL	16.5*	7,300										
				Win. WAAL (Gray)	16.5	7,900										
				Fed. 12SO	16.0*	8,000										
				Rem. TGT 12	16.5*	7,300										
				Purple PC	17.0*	7,500										
—	⅞	1,250	Win. 209	Win. WAA12SL	18.0*	9,300										
				Win. WAAL (Gray)	17.5	8,600	18.5	7,200								
				Fed. 12SO	17.5	9,000										
				Rem. TGT 12	18.0*	8,400										
				Purple PC	18.0*	8,400										
—	⅞	1,300	Win. 209	Win. WAA12SL	19.0	10,300	20.5	8,400	20.5	8,800						
				Win. WAAL (Gray)	18.5	9,300	19.5	8,000	20.0	8,300						
				Fed. 12SO	19.0	9,400	21.0	8,300	21.0	8,900						
				Rem. TGT 12	19.0*	9,300	20.5	7,600	21.0	8,400						
				Purple PC	19.5*	9,000	20.5	7,200	21.5*	7,900						
				Claybuster			21.0	7,200								
—	⅞	1,400	Win. 209	Win. WAAL (Gray)			22.0	10,200								
2¾	1	1,200	Win. 209	Win. WAA12SL	18.0	10,200	19.0	8,200	19.5	8,500						
				Win. WT12 (Orange)	17.5	10,600										
				Fed. 12SO	18.0	9,600	19.0	8,700	19.5	8,400						
				Rem. TGT 12	18.0	9,200	19.0	8,000	19.5	7,900						
				Purple PC	18.0	8,900			19.5	7,000						
				Claybuster			19.0	7,400								
3	1	1,255	Win. 209	Win. WAA12SL	19.0	10,500	20.0	9,500	21.0	9,200						
				Rem. TGT 12	19.5	9,800	20.0	9,100	21.0	8,800						
				Purple PC	19.0	9,700			21.5	8,700						
				Fed. 12SO			20.0	10,000								
				Claybuster			20.5	8,800								
3¼	1	1,290	Win. 209	Win. WAA12SL			21.5	10,300	21.5	9,500						
				Win. WAA12 (White)	19.0	10,500			20.0	8,700						
				Fed. 12C1	20.0	10,200			21.0	8,800						
				Fed. 12S3	20.0	9,900			22.5	9,700						
				Fed. 12SO			20.5	10,200								
				Rem. RXP12	20.0	10,100			21.0	8,800						
				Rem. TGT 12			21.0	9,500	22.0	9,700						
				Purple PC	20.0	10,400			22.0	9,000						
				Claybuster			21.5	9,200								
			CCI 209M	Win. WAA12 (White)	18.5	10,400			21.5	9,900						
Extra Lite	1⅛	1,090	Win. 209	Win. WAA12SL	16.0	9,300			18.0	8,000						
				Win. WAA12 (White)	16.0	9,500	17.0	9,000	17.5	8,100						
				Win. WT12 (Orange)					16.5	9,000						
				Rem. Fig. 8	16.0	8,300	17.5	8,100	18.0	7,400						
				Rem. RXP12	16.5	9,000	17.0	9,100	17.5	7,600						
				Fed. 12S3	17.0	10,400			18.0	9,700						
				Hornady Versalite	16.5	9,000			17.5	7,800						
				Red PC	16.0	9,100	17.0	7,300	18.0	7,300						
				Claybuster			17.0	7,600								
			Fed. 209	Win. WAA12 (White)	16.0	9,900										
			Fed. 209A	Win. WAA12 (White)			17.0	8,700								
			Rem. 209P	Win. WAA12 (White)	17.0	8,100	17.0	8,000								
			CCI 209M	Win. WAA12 (White)	17.0	9,800										
			CCI 209SC	Win. WAA12 (White)			17.0	7,900								
			Fio. 616	Win. WAA12 (White)	16.0	8,900										
2¾	1⅛	1,145	Win. 209	Win. WAA12SL					19.0	9,400						
				Win. WAA12 (White)	17.0	10,000	18.0	9,400	18.0	8,500						
				Win. WT12 (Orange)	16.5	10,700	18.5	9,600	18.0	9,400						
				Rem. Fig. 8	17.5	9,900	19.0	9,400	19.0	8,600						
				Rem. RXP12	17.0	8,400	19.0	9,400	18.0	8,100						
				Fed. 12C1	17.5	9,400			18.5	8,100						
				Fiocchi FTW1	17.5	10,100			19.5	9,600						
				Hornady Versalite	18.0	9,500			19.5	8,000						
				Windjammer	17.5	9,300			18.0	8,400						
				Red PC	17.5	9,500	18.5	8,600	19.0	8,300						
				Claybuster			18.5	9,000								

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12-Gauge, 2¾-in. Winchester Plastic AA Shells (continued)

Dram Equiv.	Shot Wt. (ounces)	Velocity (fps)	Primer	Wad	Red Dot		American Select		Green Dot		Unique		Herco		Blue Dot	
					Grains	Approx. psi	Grains	Approx. psi	Grains	Approx. psi	Grains	Approx. psi	Grains	Approx. psi	Grains	Approx. psi
2¾	1⅛	1,145	Fed. 209A	Win. WAA12 (White)	17.0	10,600	18.5	9,800	18.0	9,300						
				Rem. Fig. 8	17.0	9,800			18.5	8,600						
				Hornady Versalite	17.0	10,300			18.5	9,300						
				Windjammer	17.0	9,000			18.5	8,200						
				Red PC	17.0	10,100			18.5	8,700						
				Claybuster	17.0	9,600			18.5	8,400						
			Rem. 209P	Win. WAA12 (White)	17.5	8,700	19.0	8,700								
			CCI 109	Win. WAA12 (White)	17.0	9,200			18.0	8,200						
			CCI 209M	Win. WAA12 (White)	17.5	10,400			18.5	10,100						
			CCI 209SC	Win. WAA12 (White)	17.5	10,600	18.5	9,600	19.5	10,300						
				Rem. Fig. 8	18.0	10,500			20.5	9,700						
				Windjammer	18.0	9,900			20.5	9,500						
			Fio. 616	Win. WAA12 (White)	17.0	10,200			18.5	9,400						
3	1⅛	1,200	Win. 209	Win. WAA12SL					20.5	10,700	22.5	9,100				
				Win. WAA12 (White)	18.0	10,400	19.5	10,300	19.5	9,300	21.0	9,100				
				Win. WT12 (Orange)	17.0	10,700	19.5	10,700	19.0	10,100	21.5	9,000				
				Rem. Fig. 8	18.5	10,700	20.0	9,800	20.5	9,500	22.5	8,300				
				Rem. RXP12	18.5	9,800	20.5	10,700	19.5	8,900	22.0	8,700				
				Fed. 12C1	18.5	9,700			19.5	9,000	22.0	8,900				
				Fiocchi FTW1	18.5	10,700			20.0	9,900	22.5	8,800				
				Hornady Versalite	19.0	9,700			21.0	9,000	21.0	8,200				
				Windjammer	18.5	9,900			21.0	9,000	22.5	8,200				
				Red PC	18.5	10,500	20.0	10,100	20.5	9,800	23.5	9,500				
				Claybuster			19.5	10,200								
			Fed. 209A	Win. WAA12 (White)			19.5	10,800	19.0	10,200						
				Rem. Fig. 8	18.5	10,200			19.5	9,400						
				Hornady Versalite	18.0	10,700			19.5	10,400						
				Windjammer	18.0	10,000			20.0	9,200						
				Red PC	18.0	10,000			19.5	10,500						
				Claybuster	18.5	10,500			19.5	9,300						
			Rem. 209P	Win. WAA12 (White)	19.0	9,500	21.0	9,600	20.0	9,800	23.0	7,500				
			CCI 109	Win. WAA12 (White)	18.0	10,400			19.0	9,300						
			CCI 209M	Win. WAA12 (White)	18.5	10,500			20.0	10,400	21.5	10,300				
			CCI 209SC	Win. WAA12 (White)			19.5	10,100	20.5	10,700						
				Rem. Fig. 8	18.5	10,400			22.0	10,400						
				Windjammer					22.0	10,200						
			Fio. 616	Win. WAA12 (White)	18.0	10,500			20.0	9,500	21.5	9,100				
Heavy	1⅛	1,250	Win. 209	Win. WAA12SL							24.0	9,900				
				Win. WAA12 (White)					21.5	10,500	23.5	9,400	25.0	9,500		
				Win. WT12 (Orange)					19.0	9,900	22.5	9,500	23.5	9,400		
				Rem. Fig. 8					22.0	10,300	24.0	9,000	25.0	9,100		
				Rem. RXP12			21.0	10,800	21.0	9,500	23.0	9,200	25.0	9,200		
				Fed. 12C1					21.0	10,200	23.0	9,500	25.0	9,400		
				Hornady Versalite					22.0	9,900	24.0	9,400	24.5	9,200		
				Red PC			21.5	10,800	22.0	10,300	24.5	10,000	25.0	9,100		
				Claybuster			20.5	10,700								
			Win. 209	Activ T32	21.5	9,600			23.0	8,800						
			Fed. 209	Win. WAA12 (White)							24.0	10,100				
			Rem. 209P	Win. WAA12 (White)							24.0	9,300				
				Rem. Fig. 8			22.5	9,400								
			Fio. 616	Win. WAA12 (White)	22.0	10,500			23.5	10,100						
3½	1⅛	1,310	Win. 209	Rem. RXP12							24.0	9,800	26.5	9,100		
				Win. WAA12 (White)							25.5	10,000	26.5	9,300		
				Red PC					23.0	10,200	25.0	9,100				
				Hornady Versalite							25.0	10,300	26.5	9,900		
			Fed. 209	Win. WAA12 (White)							24.5	10,600				
			Rem. 209P	Win. WAA12 (White)							26.0	9,700	27.0	8,100		
			CCI 209M	Win. WAA12 (White)							25.5	9,700				

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12-Gauge, 2¾-in. Winchester Plastic AA Shells (continued)

Dram Equiv.	Shot Wt. (ounces)	Velocity (fps)	Primer	Wad	Red Dot Grains	Red Dot Approx. psi	AmericanSelect Grains	AmericanSelect Approx. psi	Green Dot Grains	Green Dot Approx. psi	Unique Grains	Unique Approx. psi	Herco Grains	Herco Approx. psi	Blue Dot Grains	Blue Dot Approx. psi
3¼	1¼	1,220	Win. 209	Fed. 12S4							23.5	10,400	25.0	9,300		
				Rem. RP12							22.5	9,500				
				Win. WAA12F114							23.5	9,900	25.0	8,400		
				Hornady Versalite							24.0	9,800	25.5	8,500		
			Win. 209	Activ T35							22.5	10,700	24.5	10,400		
			Fed. 209	Win. WAA12F114							23.0	10,000	24.0	10,100		
			Rem. 209P	Win. WAA12F114							24.0	10,000	25.5	8,300		
			CCI 209M	Win. WAA12F114							23.5	9,900	24.0	9,100		
			Fio. 616	Win. WAA12F114							23.0	10,300	25.0	9,800		
3½	1¼	1,275	Win. 209	Win. WAA12F114									26.5	10,700	34.5	9,900
				Rem. SP12											35.0	8,200
				Fed. 12S4									26.0	10,700	34.0	10,500
				Activ T35									26.0	10,700	34.5	9,000
			Fed. 209	Win. WAA12F114									26.0	10,700	32.0	9,500
			Rem. 209P	Win. WAA12F114									27.0	9,400		
			CCI 209M	Win. WAA12F114									27.0	10,700	35.0	8,600
			Fio. 616	Win. WAA12F114									26.0	10,100	34.0	8,600
3¾	1¼	1,330	Win. 209	Rem. RP12											38.0	10,200
				Rem. SP12											37.0	10,300
				Win. WAA12F114											37.0	10,600
				Activ T35											36.5	9,700
			Fed. 209	Win. WAA12F114											33.5	10,500
			CCI 209M	Win. WAA12F114											36.5	9,500
3½	1⅜	1,240	Win. 209	Win. WAA12F114											34.0	10,500
				Rem. SP12											33.0	10,600
				Fed. 12S4											33.0	10,400
			Fed. 209	Win. WAA12F114											32.0	10,100
			CCI 209M	Win. WAA12F114											33.5	8,300
3¼	1½	1,150	Win. 209	Rem. RP12											31.0	9,400
				Activ T42											30.0	10,000
			Rem. 209P	Activ T42											30.0	10,400
			CCI 209M	Activ T42											30.0	10,400

PC: Pattern Control

*NOTES: *For each asterisk(*), add one 20-gauge, 0.135-in. thick card wad to the inside bottom of the shot cup.*
Auto-loading shotguns may not function with loads having pressures less than 7,000 psi. It is important to have tight crimps to prevent load efficiencies (pressures) from dropping. The efficiency may also drop when these loads are fired at low temperatures.

12-Gauge, 2¾-in. Winchester Polyformed with Plastic Wad

Dram Equiv.	Shot Wt. (ounces)	Velocity (fps)	Primer	Wad	Red Dot Grains	Red Dot Approx. psi	Green Dot Grains	Green Dot Approx. psi	Unique Grains	Unique Approx. psi	Herco Grains	Herco Approx. psi	Blue Dot Grains	Blue Dot Approx. psi
3¼	1	1,290	Win. 209	Win. WAA12F1	22.0	7,600	23.5	7,000						
				Fed. 12SO	21.0	9,600								
				Rem. Fig. 8	21.5	8,500	23.0	7,800						
				Purple PC	21.5	7,900	24.0	6,800						
			Rem. 209P	Win. WAA12F1	21.5	7,800								
			Fed. 209	Win. WAA12F1	21.0	8,200								
			CCI 209M	Win. WAA12F1	21.0	8,400	23.0	7,500						
			Fio. 616	Win. WAA12F1	21.5	7,900	23.0	7,400						
2½ Extra Lite	1⅛	1,090	Win. 209	Win. WAA12 (White)	16.5	7,800								
				Fed. 12S3	17.5	7,800								
				Rem. Fig. 8	17.0	6,900	18.5	6,700						
				Hornady Versalite	16.5	7,900	18.5	6,700						
				Red PC	17.0	7,500								
			Rem. 209P	Win. WAA12 (White)	16.5	6,700								
			Fed. 209	Win. WAA12 (White)	16.5	7,900	18.5	7,000						
			CCI 209M	Win. WAA12 (White)	17.0	8,000	18.5	7,000						
			Fio. 616	Win. WAA12 (White)	17.0	7,600	18.5	7,100						
2¾	1⅛	1,145	Win. 209	Win. WAA12 (White)	18.0	8,500	20.5	7,300						
				Fed. 12S3	18.0	8,900								
				Rem. Fig. 8	18.0	8,000	19.5	7,000						
				Hornady Versalite	18.0	8,600	20.0	7,200						
				Red PC	18.5	7,800	20.5	6,800						
			Fed. 209	Win. WAA12 (White)	18.0	8,700	20.0	7,000						
			CCI 209M	Win. WAA12 (White)	18.0	9,000	20.0	7,400						
			Fio. 616	Win. WAA12 (White)	18.5	8,300	20.0	6,800						
			Rem. 209P	Win. WAA12 (White)	18.5	8,100								
3	1⅛	1,200	Win. 209	Win. WAA12 (White)	19.5	8,900	22.0	8,700	23.0	7,600				
				Fed. 12S3	19.0	9,600	21.5	8,300	23.5	8,300				
				Rem. Fig. 8	19.0	8,700	21.5	8,200	23.0	7,400				
				Hornady Versalite	19.0	9,400	21.5	7,700	23.0	7,700				
				Red PC	19.5	8,400	22.0	7,600	23.5	7,600				
			Rem. 209P	Win. WAA12 (White)	19.5	9,000			23.5	7,900				
			Fed. 209	Win. WAA12 (White)	19.0	9,900	21.5	7,700	23.5	7,900				
			Fio. 616	Win. WAA12 (White)	19.5	9,300	21.5	7,600	23.5	7,200				
3¼	1⅛	1,255	Win. 209	Win. WAA12 (White)	21.0	9,400	23.5	8,800	25.0	8,500				
				Fed. 12S3			23.5	8,600	25.0	8,400				
				Hornady Versalite	21.5	9,700	24.0	8,300	25.0	8,000				
				Red PC	21.0	9,900	23.5	8,000	25.0	7,900				
				Activ T32	21.0	10,100	23.5	8,800	25.0	8,300				
			Rem. 209P	Win. WAA12 (White)	21.5	9,500			25.5	7,700				
			Fed. 209	Win. WAA12 (White)	20.5	10,200	23.5	8,800	25.0	8,400				
			CCI 209M	Win. WAA12 (White)	21.5	10,000	23.0	8,800	25.0	8,500				
			Fio. 616	Win. WAA12 (White)	21.5	10,100	23.0	8,600	25.0	8,000				
3½	1⅛	1,310	Win. 209	Win. WAA12 (White)			25.5	8,900	26.5	8,600				
				Fed. 12S3			24.5	9,900	26.0	9,400				
				Hornady Versalite	22.5	10,300	25.0	8,900	26.5	9,000				
				Red PC	22.5	10,200	25.5	8,700	26.5	8,600				
				Activ T32			24.5	9,500	26.5	9,000				
			Rem. 209P	Win. WAA12 (White)	22.5	10,200	25.0	8,800	27.0	9,000				
			Fed. 209	Win. WAA12 (White)			24.5	9,400	27.0	8,500				
			CCI 209M	Win. WAA12 (White)	22.0	9,400	25.0	9,000	26.0	8,500				
			Fio. 616	Win. WAA12 (White)	22.5	10,600	24.5	8,900	27.5	9,200				

PC: Pattern Control

12-Gauge, 3-in. Winchester-Western Plastic AA-Type Shells

Dram Equiv.	Shot Wt. (ounces)	Velocity (fps)	Primer	Wad	Herco Grains	Herco Approx. psi	Blue Dot Grains	Blue Dot Approx. psi	2400 Grains	2400 Approx. psi
3¾	1⅜	1,295	Win. 209	Fed. 12S3			37.5	10,300		
				Rem. RXP12			38.0	9,400		
				Win. WAA12 (White)			37.5	10,000		
4	1⅜	1,350		Fed. 12S4			40.0	10,500		
				Rem. SP12			40.5	9,300		
				Win. WAA12F114			39.0	9,900		
4	1½	1,315		Rem. SP12			38.5	10,300		
4¼	1⅝	1,335		Rem. RP12					50.0	10,000
4	1¾	1,245		Rem. RP12					45.0	9,900

12-Gauge, 2¾-in. Activ Plastic Shells

Dram Equiv.	Shot Wt. (ounces)	Velocity (fps)	Primer	Wad	Red Dot Grains	Red Dot Approx. psi	American Select Grains	American Select Approx. psi	Green Dot Grains	Green Dot Approx. psi	Unique Grains	Unique Approx. psi	Herco Grains	Herco Approx. psi	Blue Dot Grains	Blue Dot Approx. psi
2¾	1⅛	1,145	CCI 209	Fed. 12S3	18.5	7,800										
			CCI 209M	Fed. 12S3	17.5	8,100										
			Fed. 209	Fed. 12S3	18.0	8,700										
			CCI 209SC	Claybuster			19.0	7,000								
				Activ TG30			19.5	8,100								
			Rem. 209P	Claybuster			20.0	6,900								
				Activ TG30			20.0	7,200								
			Win. 209	Fed. 12S3	18.0	8,500										
				Rem. PT12	17.5	8,300										
				Win. WAA12F1	18.5	7,700										
				Purple PC	18.5	7,400										
				Claybuster			19.0	7,300								
				Activ TG30			19.5	8,100								
			Fed. 209A	Claybuster			19.0	8,700								
				Activ TG30			19.5	8,500								
3	1⅛	1,200	CCI 209	Fed. 12S3	20.0	8,200										
			CCI 209M	Fed. 12S3	19.5	10,000			21.5	8,700						
			CCI 209SC	Claybuster			20.5	9,100								
				Activ TG30			21.0	9,200								
			Fed. 209	Fed. 12S3	19.5	9,600			21.5	7,500						
			Fed. 209A	Claybuster			20.5	10,100								
				Activ TG30			20.5	9,600								
			Rem. 209P	Claybuster (Red)			21.0	9,600								
				Activ TG30			21.0	8,600								
			Win. 209	Fed. 12S3	19.5	10,300			21.5	7,400						
				Rem. PT12	19.5	9,400			22.0	8,000						
				Win. WAA12F1	19.5	8,700			22.5	6,500						
				Purple PC	20.0	8,400			23.0	7,000						
				Claybuster			20.5	8,600								
				Activ TG30			21.0	9,200								
Heavy	1⅛	1,250	Rem. 209P	Activ TG30			22.5	8,900								
				Claybuster (Red)			22.5	10,000								
			Win. 209	Activ TG30			22.0	10,100								
				Claybuster			22.0	9,700								
			CCI 209SC	Activ TG30			22.5	10,600								
				Claybuster			22.0	10,500								
			Fed. 209A	Activ TG30			21.0	9,000								
				Claybuster			21.5	10,800								
3¼	1⅛	1,255	CCI 209M	Fed. 12S3					22.0	9,400						
				Win. WAA12 (White)					23.0	8,800						
3¼	1¼	1,220	CCI 209	Activ T32					23.0	9,300	25.5	8,100				
				Win. WAA12 (White)					23.5	9,000	25.5	8,400				
			CCI 209M	Activ T32					22.0	9,600	24.5	9,000				
				Win. WAA12 (White)					22.5	10,000	24.5	9,000				
			Fed. 209	Activ T32					22.5	10,000	24.5	9,200				
				Win. WAA12 (White)					22.5	9,800	24.5	9,500				
			Win. 209	Activ T32					23.0	9,700	24.5	9,000				
				Fed. 12C1							24.5	8,900				
				Rem. RXP12					22.0	9,900	24.5	9,200				
				Win. WAA12 (White)					22.0	10,200	24.0	9,200				
3¾	1¼	1,330	CCI 209	Fed. 12S4									30.5	9,800	39.5	9,300
			CCI 209M	Activ T32									29.0	10,200		
			Fed. 209	Activ T32							27.5	10,500	29.5	10,300		
				Fed. 12S4											37.0	10,100
			Win. 209	Activ T32							27.5	10,200	29.0	9,700		
				Fed. 12S4											39.5	9,000
				Rem. SP12									28.5	9,800	39.0	8,700
				Win. WAA12F114									28.5	10,300	40.0	8,800

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12-Gauge, 2¾-in. Activ Plastic Shells (continued)

Dram Equiv.	Shot Wt. (ounces)	Velocity (fps)	Primer	Wad	Red Dot Grains	Red Dot Approx. psi	American Select Grains	American Select Approx. psi	Green Dot Grains	Green Dot Approx. psi	Unique Grains	Unique Approx. psi	Herco Grains	Herco Approx. psi	Blue Dot Grains	Blue Dot Approx. psi
3¾	1⅜	1,295	CCI 209	Activ T35									30.5	10,300		
				Rem. RP12											40.0	8,500
			CCI 209M	Activ T35									29.5	10,500	38.5	8,700
				Rem. RP12											38.0	9,400
			Fed. 209	Activ T35											38.0	9,700
				Rem. RP12											37.0	10,200
			Win. 209	Activ T35											39.0	9,100
				Rem. RP12											38.0	9,500
4	1⅜	1,350	Fed. 209	Activ T35											40.0	10,100
			Win. 209	Activ T35											39.5	10,100
3¼	1½	1,150	CCI 209M	Activ T42											34.0	9,100
				Rem. RP12											34.5	7,700
			Fed. 209	Activ T42											32.5	8,600
			Rem. 209P	Activ T42											34.0	8,200
			Win. 209	Activ T42											33.0	9,200
			Fio. 616	Activ T42											33.5	9,100
3¾	1½	1,260	CCI 209	Activ T42											38.5	9,600
			CCI 209M	Activ T42											36.5	10,200
				Rem. RP12											35.5	10,000
			Win. 209	Activ T42											36.0	10,400
				Rem. RP12											35.5	9,900
3¼	1⅝	1,115	CCI 209M	Activ T42											31.5	9,600
			Fed. 209	Activ T42											31.0	9,100
			Win. 209	Activ T42											31.5	9,500
			Rem. 209P	Activ T42											31.5	9,400
			Fio. 616	Activ T42											31.0	9,200

12-Gauge, 3-in. Activ Plastic Shells

Dram Equiv.	Shot Wt. (ounces)	Velocity (fps)	Primer	Wad	Red Dot Grains	Red Dot Approx. psi	Green Dot Grains	Green Dot Approx. psi	Unique Grains	Unique Approx. psi	Herco Grains	Herco Approx. psi	Blue Dot Grains	Blue Dot Approx. psi
3¾	1⅜	1,295	CCI 209M	Fed. 12S3							31.5	10,400		
				Rem. RXP12							31.5	10,000		
				Win. WAA12 (White)							31.5	10,100		
4	1⅜	1,350	CCI 209M	Activ T32							33.5	10,700	43.0	8,300
				Rem. RXP12							33.0	10,400	42.5	7,900
				Win. WAA12 (White)									40.5	8,700
				Fed. 12S3									41.5	8,600
4	1½	1,315	CCI 209M	Activ T35									41.0	9,600
				Fed. 12S4									40.5	9,200
				Rem. R12H									41.5	8,500
				Win. WAA12F114									40.0	9,800
4	1⅝	1,280	CCI 209M	Activ T35									39.0	10,000
				Fed. 12S4									39.5	10,600
				Rem. SP12									41.5	10,100
				Win. WAA12F114									40.0	9,900
4	1¾	1,245	CCI 209M	Activ T35									40.0	10,400
				Rem. SP12									40.0	10,700
3¾	1⅞	1,155	CCI 209M	Activ T35									36.5	10,000
				Rem. SP12									37.0	10,200
3¾	2	1,120	CCI 209M	Rem. RP12									35.0	10,600

12-Gauge, 2¾-in. Fiocchi Plastic Target Shells

Dram Equiv.	Shot Wt. (ounces)	Velocity (fps)	Primer	Wad	Red Dot Grains	Red Dot Approx. psi	American Select Grains	American Select Approx. psi	Green Dot Grains	Green Dot Approx. psi	Unique Grains	Unique Approx. psi	Herco Grains	Herco Approx. psi	Blue Dot Grains	Blue Dot Approx. psi
—	⅞	1,200	Fio. 616	Rem. TGT 12	17.0*	6,900										
				Fed. 12SO	17.5	6,700										
				Win. WAA12SL	17.0*	6,700										
				Purple PC	17.5*	6,400										
—	⅞	1,250	Fio. 616	Rem. TGT 12	18.5	7,000										
				Fed. 12SO	19.0	6,900										
				Win. WAA12SL	18.5	6,800										
				Purple PC	19.0*	6,700										
—	⅞	1,300	Fio. 616	Fed. 12SO	19.5	8,800										
				Rem. TGT 12	20.0	7,900			22.0	7,600						
				Win. WAA12SL	20.0	8,100			22.0	7,900						
				Purple PC	20.0*	8,600			22.5	7,700						
2¾	1	1,200	Fio. 616	Fed. 12SO	18.0	9,100			20.0	8,100						
				Rem. TGT 12	18.0	8,500			20.0	7,400						
				Win. WAA12SL	18.0	8,500			20.0	7,900						
				Purple PC	18.0	8,100			20.0	7,200						
3	1	1,255	Fio. 616	Rem. TGT 12	19.0	9,300			21.0	8,400						
				Win. WAA12SL	19.0	9,500			21.0	8,100						
				Purple PC	19.0	9,500			21.0	8,200						
3¼	1	1,290	Fio. 616	Rem. TGT 12	20.5	10,100			22.5	8,600						
				Win. WAA12SL	20.5	10,300			22.5	9,400						
				Purple PC	21.0	9,800			23.0	8,400						
Extra Lite	1⅛	1,090	Fio. 616	Fiocchi FTW1	16.5	8,100			18.5	6,800						
				Fiocchi TL1			18.0	7,400								
				Fed. 12S3	16.0	8,400	17.5	7,400	18.5	7,200						
				Fed. 12C1					18.5	6,800						
				Win. WAA12 (White)	17.0	7,600			18.5	7,000						
				Win. WAA12SL	17.0	7,300										
				Rem. Fig. 8	16.0	8,000			18.5	6,500						
				Rem. RXP12	16.5	8,700			18.5	6,700						
				Hornady Versalite	16.5	8,100			18.5	7,100						
				Claybuster (Red)			18.0	7,100								
2¾	1⅛	1,145	Fio. 616	Fiocchi FTW1	17.5	8,800			20.0	7,300						
				Fiocchi TL1			19.5	8,500								
				Fed. 12S3	18.0	9,200	19.0	8,700	20.0	7,500						
				Fed. 12C1	18.0	8,800			19.5	7,500						
				Rem. Fig. 8	18.0	8,400			20.0	7,100						
				Rem. RXP12	18.0	8,700			20.0	7,200						
				Win. WAA12 (White)	18.0	9,000			20.0	7,600						
				Win. WAA12SL	18.0	8,300										
				Hornady Versalite	17.5	9,000			19.5	7,500						
				Windjammer	18.5	7,400			19.5	7,200						
				Claybuster (Red)			19.5	8,000								
3	1⅛	1,200	Fio. 616	Fiocchi FTW1	19.0	9,300			21.0	7,800	23.5	7,400				
				Fiocchi TL1			20.5	9,200								
				Fed. 12S3	19.0	9,700	20.5	9,400								
				Fed. 12C1	19.0	9,500			21.0	8,400	23.5	6,900				
				Rem. Fig. 8	19.5	9,600			21.5	8,500	23.5	7,000				
				Rem. RXP12	19.5	9,700			21.5	7,900	22.5	7,200				
				Win. WAA12 (White)	19.5	9,400			21.5	8,100	23.5	6,800				
				Hornady Versalite	18.5	9,500			21.0	8,200	24.0	7,100				
				Windjammer	20.0	8,600			21.0	7,700	24.0	6,400				
				Claybuster (Red)			21.0	9,000								
Heavy	1⅛	1,250	Fio. 616	Fiocchi FTW1	21.0	10,500			23.0	9,200	24.5	8,200	26.0	8,300		
				Fiocchi TL1			22.0	10,200								
				Fed. 12S3			22.0	10,300								
				Fed. 12C1	20.5	10,700			22.5	9,300	24.5	8,000	26.0	7,500		
				Rem. Fig. 8	20.5	10,200			23.0	8,800	24.5	7,600	26.0	7,300		
				Rem. RXP12					23.0	9,200	23.5	8,200	26.0	7,500		
				Win. WAA12 (White)					23.0	8,900	25.0	7,800	26.0	7,900		
				Hornady Versalite					22.5	9,300	25.0	7,800	25.5	7,700		
				Windjammer	21.0	9,400			22.5	9,000	25.5	6,900	26.5	7,700		
				Claybuster (Red)			22.5	10,700								
3½	1⅛	1,310	Fio. 616	Fed. 12S3					25.0	9,600	27.0	8,600				
			Fed. 209	Fed. 12S3					24.5	10,300	27.0	9,200				
			CCI 209M	Rem. RXP12					24.0	10,000	26.5	8,400				
			Win. 209	Win. WAA12 (White)					25.0	8,700	26.5	8,300				
3¼	1¼	1,220	Fio. 616	Fed. 12S4					23.0	9,700	25.0	8,800				
			Fed. 209	Fed. 12S4					23.0	10,000	24.5	9,500				
			CCI 209M	Rem. R12H					24.5	8,000						
			Win. 209	Win. WAA12F114					23.0	10,000	25.0	8,700				

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12-Gauge, 2¾-in. Fiocchi Plastic Target Shells (continued)

Dram Equiv.	Shot Wt. (ounces)	Velocity (fps)	Primer	Wad	Red Dot Grains	Red Dot Approx. psi	American Select Grains	American Select Approx. psi	Green Dot Grains	Green Dot Approx. psi	Unique Grains	Unique Approx. psi	Herco Grains	Herco Approx. psi	Blue Dot Grains	Blue Dot Approx. psi
3½	1¼	1,275	Fio. 616	Fed. 12S4							27.0	10,300	28.0	9,500		
			Fed. 209	Fed. 12S4							26.0	10,100	27.5	9,800		
			CCI 209M	Rem. SP12									28.0	8,300		
			Win. 209	Win. WAA12F114							27.0	10,000	28.0	8,400		
3¾	1¼	1,300	Fio. 616	Fed. 12S4									30.0	9,500	40.0	8,300
				Rem. SP12									30.5	8,600	41.0	7,700
				Win. WAA12F114									30.0	9,200	39.5	7,500
			Fed. 209	Fed. 12S4									30.0	10,300	37.0	8,800
			CCI 209M	Rem. SP12									30.0	9,200	41.0	7,600
			Win. 209	Win. WAA12F114									30.0	10,100	38.5	8,300
3¾	1⅜	1,295	Fio. 616	Rem. RP12											38.0	9,100
			Fed. 209	Rem. RP12											36.0	10,100
			CCI 209M	Rem. RP12											37.0	9,600
			Win. 209	Rem. RP12											38.0	9,500
4	1⅜	1,350	Fio. 616	Rem. RP12											41.5	9,400
			Fed. 209	Rem. RP12											39.0	10,200
			CCI 209M	Rem. RP12											40.0	10,100
			Win. 209	Rem. RP12											40.0	9,900
3¼	1½	1,150	Fio. 616	Activ T42											32.5	9,000
				Rem. RP12											32.5	8,700
			Fed. 209	Activ T42											32.5	8,100
			Rem. 209P	Activ T42											33.5	8,300
			Win. 209	Activ T42											33.5	8,700
			CCI 209M	Activ T42											34.0	8,500
3½	1½	1,205	Fio. 616	Rem. RP12											36.5	9,000
			Fed. 209	Rem. RP12											34.5	8,500
			CCI 209M	Rem. RP12											33.0	9,500
			Win. 209	Rem. RP12											35.5	8,600
3¾	1½	1,260	Fio. 616	Rem. RP12											37.5	9,600
			CCI 209M	Rem. RP12											36.5	10,600
			Win. 209	Rem. RP12											36.5	10,300
3¼	1⅝	1,115	Fio. 616	Activ T42											31.0	9,600
			Fed. 209	Activ T42											31.0	9,300
			Win. 209	Activ T42											31.0	9,000
			Rem. 209P	Activ T42											31.5	8,600
			CCI 209M	Activ T42											31.5	8,900

PC: Pattern Control

*NOTES: *For each asterisk (*), add one 20-gauge, 0.135-in. thick card wad to the inside bottom of the shot cup.*
Auto-loading shotguns may not function with loads having pressures less than 7,000 psi. It is important to have tight crimps to prevent load efficiencies (pressures) from dropping. The efficiency may also drop when these loads are fired at low temperatures.

12-Gauge, 3-in. Fiocchi Plastic Shells

Dram Equiv.	Shot Wt. (ounces)	Velocity (fps)	Primer	Wad	Green Dot Grains	Green Dot Approx. psi	Unique Grains	Unique Approx. psi	Herco Grains	Herco Approx. psi	Blue Dot Grains	Blue Dot Approx. psi
3¾	1⅜	1,295	Fio. 616	Fed. 12S3					31.5	9,100		
				Rem. RXP12					32.5	8,600		
				Win. WAA12 (White)					31.5	8,900		
				Fiocchi FTW1					31.0	9,200		
			Win. 209	Fed. 12S3					29.5	10,600	37.5	8,800
			CCI 209M	Fed. 12S3					30.0	10,000	37.0	9,000
4	1⅜	1,350	Fio. 616	Fed. 12S4					32.0	10,700		
				Rem. SP12					32.5	10,100		
				Win. WAA12F114					32.5	10,700		
				Activ T32					32.5	10,300		
			Win. 209	Fed. 12S4							38.5	10,100
			CCI 209M	Fed. 12S4							38.0	10,400
4	1½	1,315	Fio. 616	Fed. 12S4							39.0	10,300
				Rem. SP12							39.0	9,700
				Win. WAA12F114							39.0	9,400
				Activ T35							39.0	9,000
			Win. 209	Fed. 12S4							39.0	10,600
			CCI 209M	Fed. 12S4							38.0	10,400
4	1⅝	1,280	Fio. 616	Fed. 12S4							39.0	10,700
				Rem. SP12							39.5	9,700
				Win. WAA12F114							38.5	10,500
				Activ T35							39.0	10,500
4	1¾	1,245	Fio. 616	Activ T35							37.5	10,300
3¾	1⅞	1,155	Fio. 616	Rem. RP12							34.5	10,700
				Activ T35							34.5	10,300

Additional 12-Gauge 2¾-in., 1-oz. Target Loads

Shell	Dram Equiv.	Velocity (fps)	Primer	Wad	Bullseye Grains	Bullseye Approx. psi	Red Dot Grains	Red Dot Approx. psi	Green Dot Grains	Green Dot Approx. psi
Federal Paper Target	2¾	1,200	Fed. 209A	Fed. 12SO	18.5	7,800	19.0	8,000		
				Fed. 12S3	18.5*	8,500	18.5	7,400		
				Rem. PT12	18.0	6,200	18.0	7,500		
				Rem. R12L	18.5*	7,800	18.5	7,100		
				Rem. RXP12	18.5*	7,600	19.0	7,200		
				Win. WAA12F1	18.0*	7,500	18.5*	8,100		
				Win. WAA12 (White)	18.5*	8,700	18.5	7,800		
				Pacific Versalite	18.5*	8,500	18.0	7,300		
				Lage Uniwad	19.0*	8,600	19.0	7,100		
				Windjammer	19.0*	7,300	19.0*	7,400		
				Purple PC	19.0	6,400	19.0	7,100		
			CCI 209	Fed. 12SO	18.5	7,600	19.0	7,600		
			CCI 209M	Purple PC	18.0	6,900	18.5	6,600		
			Rem. 209	Purple PC	18.5	6,200	18.0	7,800		
			Win. 209	Purple PC	19.0	7,100	19.0	7,200		
Federal Gold Medal	2¾	1,200	Fed. 209A	Fed. 12SO	18.0	7,600	18.0	7,900	21.0	7,100
				Rem. PT12			18.5	7,500	21.0	6,100
				Rem. RXP12	17.5*	9,000	18.0*	8,700	20.0	7,600
				Win. WAA12 (White)	17.5**	9,500	18.0*	8,500	20.0*	8,200
				Win. WAA12F1	18.5*	7,600	18.0*	8,400	21.0	7,200
				Purple PC	19.0	5,700	18.5	6,900		
			CCI 209	Fed. 12SO	19.0	8,400	19.0	7,600		
			CCI 209M	Purple PC			18.0	6,900		
			Rem. 209	Purple PC	18.5	5,600	18.5	7,200	20.5	6,100
			Win. 209	Purple PC			18.5	6,700		
Rem. Premier Plastic Target	2¾	1,200	Rem. 209P	Rem. Fig. 8	17.0	7,100	18.0	8,400	20.0	6,500
				Fed. 12SO	17.5	7,800	18.0	8,800	19.5	7,200
				Win. WAA12F1	17.5	6,900	18.0	7,800	19.0	6,200
				Purple PC	18.0	6,900	18.5	7,700	20.5	6,200
				Pacific Versalite	17.0	7,500	17.5	8,600	20.0	6,600
			CCI 209M	Rem. Fig. 8	17.0	8,300	17.5	8,900	18.5	7,700
			Fed. 209	Rem. Fig. 8	17.5	7,500	18.0	8,400	20.0	7,200
			Win. 209	Rem. Fig. 8	17.5	7,900	18.0	7,100	20.0	7,100
Peters Target (Blue Magic)	2¾	1,200	Rem. 209	Purple PC	17.5	7,200	17.5	8,300	19.0	7,300
			Rem. 97★	Fed. 12SO	18.0	10,300	18.0	9,400		
				Fed. 12S3	18.5*	8,500	18.0*	8,600	19.5	7,300
				Rem. R12L	17.5*	8,300	18.0*	8,000	20.0	7,100
				Rem. RXP12	17.5*	8,800	18.0*	8,400	20.0	7,500
				Win. WAA12 (White)	17.5*	9,900	18.0*	9,100	19.5	7,500
				Win. WAA12F1	18.0	8,700	18.0	8,500	21.0	7,500
				Lage Uniwad	18.0*	9,600	18.0*	8,600	20.5	6,700
				Windjammer	18.0*	8,700	19.0*	8,300		
			CCI 209M	Rem. R12L	17.5	9,000	18.0	8,800		
				Purple PC	17.0	7,400	17.5	8,000	19.5	7,000
			Fed. 209	Purple PC	18.0	6,300	18.5	8,400	20.0	6,400
			Win. 209	Purple PC	18.0	6,800	18.0	7,700		
Winchester.-Western AA	2¾	1,200	Win. 209	Fed. 12SO	18.0	9,600	18.0	9,600	19.5	8,400
				Fed. 12S3	17.5*	8,700	18.0	8,400		
				Rem. R12L	18.0*	8,800	18.0	7,600	20.0	7,100
				Rem. RXP12	17.5	8,800	18.0	8,300	20.0	7,100
				Win. WAA12 (White)	17.5*	9,900	18.0	8,800	19.5	7,500
				Win. WAA12F1	18.0**	9,500	18.0	9,000	20.0	7,600
				Lage Uniwad	17.5*	8,900	18.0	8,000	20.5	7,400
				Windjammer	18.0**	9,500	18.0*	9,100	20.0	7,600
				Purple PC	17.5	7,300	17.5	8,800	19.5	6,900
			CCI 209	Purple PC	18.0	7,300	18.5	7,800	21.0	6,300
			CCI 209M	Win. WAA12 (White)			17.5	9,900		
				Purple PC	17.5	7,900	17.5	8,500	19.0	6,600
			Fed. 209	Purple PC	17.5	7,600	17.5	8,900	19.0	7,200
			Rem. 209	Purple PC	17.5	7,400	17.5	8,600	19.0	7,700

PC: Pattern Control
*NOTE: *For each asterisk (*), add one 20-gauge, 0.135-in. thick card wad to the inside bottom of the shot cup.*

28-Gram International Target Loads with 12-Gauge, 2¾-in. Federal Gold Medal Plastic Target Shells

Dram Equiv.	Velocity (fps)	Primer	Wad	Red Dot Grains	Red Dot Approx. psi	Green Dot Grains	Green Dot Approx. psi	Unique Grains	Unique Approx. psi	Herco Grains	Herco Approx. psi	Blue Dot Grains	Blue Dot Approx psi
3½	1,345	Fed. 209A	Fed. 12SO	23.0	9,900	24.5	9,100	27.5	7,400				
			Rem. Fig. 8	22.5	9,500	25.0	8,400						
			Win. WAA12SL	22.5	9,600	24.5	8,400						
			Purple PC	23.0	8,800	25.0	8,200						

PC: Pattern Control

28-Gram International Target Loads with 12-Gauge, 2¾-in. Remington Premier Plastic Target Shells

Dram Equiv.	Velocity (fps)	Primer	Wad	Red Dot Grains	Red Dot Approx. psi	Green Dot Grains	Green Dot Approx. psi	Unique Grains	Unique Approx. psi	Herco Grains	Herco Approx. psi	Blue Dot Grains	Blue Dot Approx psi
3½	1,345	Rem. 209P	Rem. Fig. 8	21.5	10,600	23.0	9,700	26.0	8,300				
			Fed. 12S3			23.0	10,300						
			Win. WAA12SL			23.0	10,100	27.0	8,500				
			Purple PC	21.5	10,600	24.0	9,900	27.0	7,800				

PC: Pattern Control

28-Gram International Target Loads with 12-Gauge, 2¾ Winchester-Western Plastic AA-Type Shells

Dram Equiv.	Velocity (fps)	Primer	Wad	Red Dot Grains	Red Dot Approx. psi	Green Dot Grains	Green Dot Approx. psi	Unique Grains	Unique Approx. psi	Herco Grains	Herco Approx. psi	Blue Dot Grains	Blue Dot Approx psi
3½	1,345	Win. 209	Win. WAA12SL					25.5	10,200				
			Rem. Fig. 8			22.5	10,600	25.0	9,600				
			Fed. 12S3					25.5	9,500				
			Purple PC			23.0	9,500	26.5	8,700				

PC: Pattern Control

28-Gram International Target Loads with 12-Gauge, 2¾ Fiocchi Plastic Target Shells

Dram Equiv.	Velocity (fps)	Primer	Wad	Red Dot Grains	Red Dot Approx. psi	Green Dot Grains	Green Dot Approx. psi	Unique Grains	Unique Approx. psi	Herco Grains	Herco Approx. psi	Blue Dot Grains	Blue Dot Approx psi
3½	1,345	Fio. 616	Fed. 12S3	22.0	9,600	24.0	8,800						
			Rem. Fig. 8	21.5	9,700	24.0	8,800	26.5	7,500				
			Win. WAA12SL	21.5	10,400	24.0	8,800	27.0	7,700				
			Purple PC	22.5	9,500	24.0	8,800						

PC: Pattern Control

16-Gauge, 2¾-in. Federal Plastic Hi Power Shells with Paper Base Wad

Dram Equiv.	Shot Wt. (ounces)	Velocity (fps)	Primer	Wad	Red Dot Grains	Red Dot Approx. psi	Green Dot Grains	Green Dot Approx. psi	Unique Grains	Unique Approx. psi	Herco Grains	Herco Approx. psi	Blue Dot Grains	Blue Dot Approx. psi
2¾	1	1,220	Fed. 209A	Win. WAA16			19.0	9,800	21.0	8,400	21.5	8,100		
				Activ G28			18.5	9,300	21.5	8,200	21.5	8,000		
3	1	1,275	Fed. 209A	Win. WAA16					23.0	8,800	23.5	8,700		
				Activ G28					23.0	9,000	23.5	8,500		
2¾	1⅛	1,185	Fed. 209A	Rem. SP16			19.0	10,600	21.5	8,900	22.0	9,100		
				Win. WAA16			18.5	10,200	21.0	8,700	22.0	9,100		
3	1⅛	1,240	Fed. 209A	Rem. SP16					22.5	9,600	23.5	10,100		
				Win. WAA16					22.0	10,200	24.0	10,200		
3¼	1⅛	1,295	Fed. 209A	Rem. SP16							24.5	10,300	32.0	8,600
3¼	1¼	1,260	Fed. 209A	Rem. SP16									30.5	10,200

16-Gauge, 2¾-in. Remington-Peters SP Plastic Shells with Plastic Base Wad

Dram Equiv.	Shot Wt. (ounces)	Velocity (fps)	Primer	Wad	Red Dot Grains	Red Dot Approx. psi	Green Dot Grains	Green Dot Approx. psi	Unique Grains	Unique Approx. psi	Herco Grains	Herco Approx. psi	Blue Dot Grains	Blue Dot Approx. psi
2½	1	1,165	Rem. 209P	Win. WAA16			16.5	10,200	19.0	8,600				
				Activ G28			17.5	9,700	19.5	8,400				
2¾	1	1,220	Rem. 209P	Win. WAA16					20.0	9,400	21.0	9,700		
				Activ G28					20.5	8,600	21.0	8,900		
3	1	1,275	Rem. 209P	Win. WAA16					21.0	10,200	22.0	9,600		
				Activ G28					21.0	10,200	22.0	9,800		
2¾	1⅛	1,185	Rem. 209P	Win. WAA16					20.0	10,300	21.0	10,600		
				Activ G28					20.5	10,700	21.0	10,500		
3	1⅛	1,240	Rem. 209P	Rem. SP16									27.0	9,900

16-Gauge, 2¾-in. Winchester AA-Type Shells

Dram Equiv.	Shot Wt. (ounces)	Velocity (fps)	Primer	Wad	Red Dot Grains	Red Dot Approx. psi	Green Dot Grains	Green Dot Approx. psi	Unique Grains	Unique Approx. psi	Herco Grains	Herco Approx. psi	Blue Dot Grains	Blue Dot Approx. psi
2½	1	1,165	Win. 209	Win. WAA16					19.0	9,200				
				Activ G28			17.5	10,300	19.0	9,100				
2¾	1	1,220	Win. 209	Win. WAA16					19.5	10,500	20.0	10,200		
				Activ G28							20.0	10,100		
3	1	1,275	Win. 209	Rem. SP16									29.0	9,300
2¾	1⅛	1,185	Win. 209	Rem. SP16									27.0	10,000

16-Gauge 2¾-in. Fiocchi Plastic Shells

Dram Equiv.	Shot Wt. (ounces)	Velocity (fps)	Primer	Wad	Red Dot Grains	Red Dot Approx. psi	Green Dot Grains	Green Dot Approx. psi	Unique Grains	Unique Approx. psi	Herco Grains	Herco Approx. psi	Blue Dot Grains	Blue Dot Approx. psi
2½	1	1,165	Fio. 616	Win. WAA16	15.5	10,400	17.5	9,400	19.0	8,100				
				Activ G28	17.0	10,000	18.0	8,200	19.5	7,900				
2¾	1	1,220	Fio. 616	Activ G28					20.0	9,000	21.0	8,500		
				Win. WAA16			18.0	10,500	20.5	8,800	21.0	8,900		
3	1	1,275	Fio. 616	Activ G28					21.5	9,600	22.0	9,000		
				Win. WAA16					21.0	9,900	22.0	9,600		
2¾	1⅛	1,185	Fio. 616	Win. WAA16					19.5	10,600				
				Rem. SP16					20.5	9,900	21.0	10,200		
3	1⅛	1,240	Fio. 616	Rem. SP16							23.5	10,700	31.0	8,900
3¼	1⅛	1,295	Fio. 616	Rem. SP16									32.5	9,200

16-Gauge 2¾-in. Activ All-Plastic Shells

Dram Equiv.	Shot Wt. (ounces)	Velocity (fps)	Primer	Wad	Red Dot Grains	Red Dot Approx. psi	Green Dot Grains	Green Dot Approx. psi	Unique Grains	Unique Approx. psi	Herco Grains	Herco Approx. psi	Blue Dot Grains	Blue Dot Approx. psi
2½	1	1,165	CCI 209	Activ G28	16.5	10,100	18.0	9,200	20.0	7,900				
2¾	1	1,220	CCI 209	Activ G28			19.5	9,800	21.5	8,700	23.0	8,500		
				Win. WAA16			19.5	9,700	21.5	8,300	22.5	8,000		
3	1	1,275	CCI 209	Activ G28					23.0	9,100	24.5	8,700		
				Win. WAA16					22.5	8,700	24.0	9,000		
2¾	1⅛	1,185	CCI 209	Win. WAA16					20.5	9,200	22.0	9,400		
				Rem. SP16			19.0	10,600	21.5	9,200	22.0	8,800		
3	1⅛	1,240	CCI 209	Win. WAA16					22.0	10,000	23.0	10,200		
				Rem. SP16					22.5	10,200	24.0	9,400		
3¼	1⅛	1,295	CCI 209M	Rem. SP16									31.0	9,100
3¼	1¼	1,260	CCI 209M	Rem. SP16									30.0	10,000

20-Gauge, 2¾-in. Federal Paper Target Shells

Dram Equiv.	Shot Wt. (ounces)	Velocity (fps)	Primer	Wad	Red Dot Grains	Red Dot Approx. psi	Green Dot Grains	Green Dot Approx. psi	Unique Grains	Unique Approx. psi	Herco Grains	Herco Approx. psi	Blue Dot Grains	Blue Dot Approx. psi
2¼	¾	1,200	Fed. 209	Fed. 20S1	12.5**	11,400	14.0	9,700	15.5	9,200				
				Rem. RXP20	13.5**	10,500	14.0	10,200	16.0	8,100				
				Win. WAA20	13.0**	10,500	14.0	8,800	15.5	9,200				
			CCI 109	Fed. 20S1	15.0	10,900								
				Rem. RXP20			17.0	8,900						
				Win. WAA20					17.0	6,800				
2¼	⅞	1,155	Fed. 209	Fed. 20S1			15.0	9,900	15.5	9,000				
				Rem. RXP20	14.0	11,400	14.5	10,100	15.5	9,200				
				Win. WAA20			14.5	9,500	15.0	8,800				
			CCI 109	Fed. 20S1			14.5	8,900						
				Rem. RXP20	14.0	10,000	15.0	8,700	15.0	8,000				
				Win. WAA20			14.5	8,400						
			CCI 209M	Fed. 20S1			14.5	9,800	16.0	8,600				
Skeet	⅞	1,200	Fed. 209	Fed. 20S1			15.0	9,600	15.5	9,400				
				Rem. RXP20			15.5	10,900	16.5	9,800				
				Win. WAA20			15.0	9,700	16.0	9,200				
			CCI 109	Fed. 20S1			15.0	9,000	17.0	8,400				
				Rem. RXP20			16.0	9,900	17.0	8,500				
				Win. WAA20			15.5	8,800	17.0	8,500				
			CCI 209M	Fed. 20S1			15.0	10,500	17.0	9,900	17.0	9,600		
2½	1	1,165	Fed. 209	Rem. RXP20							17.0	11,500		
				Rem. SP20							16.5	11,500		
				Win. WAA20							16.0	11,200		
				Win. WAA20F1							16.5	11,300		

NOTE: For each asterisk (*), add one 20-gauge, 0.135-in. thick card wad to the inside bottom of the shot cup.

20-Gauge, 2¾-in. Federal Plastic Target Shells

Dram Equiv.	Shot Wt. (ounces)	Velocity (fps)	Primer	Wad	Red Dot Grains	Red Dot Approx. psi	Green Dot Grains	Green Dot Approx. psi	Unique Grains	Unique Approx. psi	Herco Grains	Herco Approx. psi	Blue Dot Grains	Blue Dot Approx. psi
2¼	¾	1,200	Fed. 209	Fed. 20S1	13.0***	10,100	15.0*	9,000	15.0**	9,000				
				Rem. RXP20	13.0***	9,400	15.0*	8,600	16.0**	8,600				
				Win. WAA20	13.0***	10,300	15.0*	8,900	16.0**	8,200				
				Windjammer*	14.0	9,300	15.5	8,700	17.0	7,500				
2¼	⅞	1,155	Fed. 209	Hornady Versalite			15.5	10,000						
				Windjammer			15.0	10,000	16.5	8,600				
				Lage Uniwad			16.0	10,100						
				Win. WAA20			14.5	9,700						
			CCI 109	Fed. 20S1			14.5	8,400						
				Rem. RXP20					16.0	8,600				
				Win. WAA20			14.5	8,000						
				Lage Uniwad			15.5	8,700	17.0	8,300				
			CCI 209M	Fed. 20S1			14.5	9,100	16.0	8,700				
Skeet	⅞	1,200	Fed. 209	Windjammer			16.0	10,900	17.0	10,600	18.5	10,200		
				Lage Uniwad			16.5	11,000						
				Fed. 20S1			16.5	10,600						
				Hornady Versalite			16.0	10,500						
			Fed. 209A	PC 20			16.0	11,200	18.0	9,800	18.0	9,200		
			CCI 109	Fed. 20S1			15.5	9,400	17.0	8,500	17.0	9,300		
				Rem. RXP20			16.0	9,600	17.0	9,200	18.0	8,800		
				Win. WAA20			15.5	9,100	17.0	8,500	17.0	9,100		
				Lage Uniwad			16.0	10,000	18.0	8,800				
			CCI 209M	Fed. 20S1			16.5	9,300	17.0	9,100	17.5	7,600		
2½	1	1,165	Fed. 209	SP20					16.0	10,800	17.0	9,600		
				Rem. RXP20							17.0	11,300		
				Win. WAA20F1					15.5	11,300	16.5	11,100		
2¾	1	1,220	Fed. 209	Rem. SP20									24.0	10,200
				Win. WAA20F1									24.0	10,100
			CCI 209M	Fed. 20S1							18.5	9,800		
2¾	1⅛	1,175	Fed. 209	Rem. SP20									23.0	10,900

NOTE: For each asterisk (*), add one 28-gauge, 0.135-in. thick card wad or one 0.135-in. thick .410 bore card wad to the inside bottom of the shot cup.

20-Gauge 3-in. Federal Plastic Shells

Dram Equiv.	Shot Wt. (ounces)	Velocity (fps)	Primer	Wad	Red Dot Grains	Red Dot Approx. psi	Green Dot Grains	Green Dot Approx. psi	Unique Grains	Unique Approx. psi	Herco Grains	Herco Approx. psi	Blue Dot Grains	Blue Dot Approx. psi
3	1 1/16	1,255	Fed. 209	Win. WAA20									26.5	9,400
				Rem. RXP20									27.0	9,200
3¼	1 1/16	1,310	Fed. 209	Rem. RXP20									28.0	10,200
				Win. WAA20									28.5	10,600
				Fed. 20S1									28.0	10,300
3	1⅛	1,230	Fed. 209	Rem. SP20*									26.5	10,300
				Win. WAA20F1									26.0	10,100
3	1¼	1,185	Fed. 209	Rem. SP20*									25.5	10,600
				Win. WAA20F1									25.5	10,400

NOTE: For each asterisk (*), add one 28-gauge, 0.135-in. thick wad to the inside bottom of the shot cup.

20-Gauge, 2¾-in. Remington Premier Plastic Target Shells

Dram Equiv.	Shot Wt. (ounces)	Velocity (fps)	Primer	Wad	Red Dot Grains	Red Dot Approx. psi	Green Dot Grains	Green Dot Approx. psi	Unique Grains	Unique Approx. psi	Herco Grains	Herco Approx. psi	Blue Dot Grains	Blue Dot Approx. psi
2¼	¾	1,200	Rem. 209P	Rem. RXP20**	13.0	10,700	14.0	10,000	15.5	8,700				
				Win. WAA20**	13.0	11,500	14.0	10,500	15.5	8,900				
				Fed. 20S1**	13.0	10,600	14.0	10,000	15.5	8,400				
				Hornady Versalite**	13.5	11,500	14.5	10,000	16.0	8,900				
				Windjammer**	13.0	11,200	14.0	10,300	15.5	8,900				
				Lage Uniwad**	13.5	11,100	14.0	9,800	15.5	8,600				
2¼	⅞	1,155	Rem. 209P	Rem. RXP20			14.5	11,500	15.5	10,000	16.5	10,000		
				Fed. 20S1					15.5	10,000	16.0	10,000		
				Win. WAA20			14.0	11,100	15.5	10,200	16.0	9,500		
				Hornady Versalite			14.0	11,500	15.5	9,700	16.0	9,600		
				Windjammer			14.0	11,200	15.5	9,900	16.0	9,500		
				Lage Uniwad			14.0	11,400	15.5	10,000	16.0	9,600		
			Fed. 209	Rem. RXP20					15.5	10,700	16.5	10,500		
			Win. 209	Rem. RXP20					15.5	10,300	16.5	10,200		
			Fio. 616	Rem. RXP20					16.0	10,700	16.5	10,100		
			CCI 209M	Rem. RXP20					15.5	11,000	16.5	10,500		
			CCI 209	Rem. RXP20			14.5	10,900	16.0	9,500	16.5	8,900		
Skeet	⅞	1,200	Rem. 209P	Rem. RXP20					16.5	10,700	17.0	10,600		
				Fed. 20S1					16.5	10,800	17.0	10,500		
				Win. WAA20					16.5	10,900	17.0	10,700		
				Hornady Versalite					16.5	10,200	17.5	10,400		
				Windjammer					16.0	10,400	17.0	10,100		
				Lage Uniwad					16.5	10,400	17.5	10,300		
				PC 20			14.5	11,200	17.0	10,500	17.5	10,200		
			Fed. 209	Rem. RXP20					16.5	11,300	17.0	11,000		
			Win. 209	Rem. RXP20					16.5	11,300	17.0	10,600		
			Fio. 616	Rem. RXP20					16.5	11,200	17.0	10,700		
			CCI 209M	Rem. RXP20					16.0	11,300	17.0	10,800		
			CCI 209	Rem. RXP20					16.5	9,900	17.5	9,400		
2½	1	1,155	Rem. 209F	Rem. SP20									21.5	9,000
				Win. WAA20F1							17.5	11,500	21.5	9,000
			Fed. 209	Rem. SP20									20.5	11,300
			Win. 209	Rem. SP20									21.5	10,600
			Fio. 616	Rem. SP20									22.5	9,800
			CCI 209M	Rem. SP20									21.5	10,500
			CCI 209	Rem. SP20									22.0	9,500
2¾	1	1,220	Rem. 209P	Rem. SP20									24.0	11,100
				Win. WAA20F1									23.5	10,900
			Win. 209	Rem. SP20									22.0	11,100
			Fio. 616	Rem. SP20									23.5	11,000
			CCI 209M	Rem. SP20									22.5	10,900
			CCI 209	Rem. SP20									23.0	10,300
2¾	1⅛	1,175	Rem. 209P	Rem. SP20									22.0	11,300
				Win. WAA20F1									22.0	11,500

NOTE: For each asterisk (*), add one 0.135-in. .410-bore card to the inside bottom of the shot cup.

20-Gauge, 2¾-in. Remington-Peters RXP Plastic Target Shells

Dram Equiv.	Shot Wt. (ounces)	Velocity (fps)	Primer	Wad	Red Dot Grains	Red Dot Approx. psi	Green Dot Grains	Green Dot Approx. psi	Unique Grains	Unique Approx. psi	Herco Grains	Herco Approx. psi	Blue Dot Grains	Blue Dot Approx. psi
2¼	¾	1,200	Rem. 97★	Rem. RXP20	12.5**	11,300	13.5*	10,400	15.5	9,900				
				Fed. 20S1	12.5*	11,400	13.5	11,100	15.5	9,900				
				Win. WAA20	12.5*	11,400	13.5	10,400	15.0	9,400				
2¼	⅞	1,155	Rem. 97★	Fed. 20S1			13.0	11,500						
				Rem. RXP20			14.0	11,300						
				Win. WAA20			13.5	11,400						
				Lage Uniwad					15.5	10,800				
			CCI 109	Fed. 20S1			13.5	11,100						
				Rem. RXP20			14.0	10,500						
				Win. WAA20			14.0	10,700						
				Lage Uniwad			14.5	11,300	15.5	9,300				
Skeet	⅞	1,200	Rem. 97★	Fed. 20S1					16.0	10,500				
				Rem. RXP20					16.0	9,700	17.0	10,600		
				Win. WAA20					16.0	10,700	17.0	10,600		
				Lage Uniwad					16.0	10,900				
			CCI 109	Fed. 20S1					16.0	10,500	17.0	11,300		
				Rem. RXP20			14.5	10,900			17.0	9,900		
				Win. WAA20					16.0	10,800	16.5	10,400		
				Lage Uniwad			15.5	11,400	16.5	10,400				
			CCI 209M	Rem. RXP20					16.0	10,500	16.5	10,700		
2½	1	1,165	Rem. 97★	Fed. 20S1					15.5	10,800				
				Rem. RXP20					16.0	10,600				
				Win. WAA20					15.5	11,200				
2¾	1	1,220	Rem. 97★	Rem. RXP20							18.0	11,000		

**NOTE: For each asterisk (*), add one 28-gauge, 0.135-in. thick card wad to the inside bottom of the shot cup.*

20-Gauge, 2¾-in. Remington-Peters Unibody Shells

Dram Equiv.	Shot Wt. (ounces)	Velocity (fps)	Primer	Wad	Green Dot Grains	Green Dot Approx. psi	Unique Grains	Unique Approx. psi	Herco Grains	Herco Approx. psi	Blue Dot Grains	Blue Dot Approx. psi	2400 Grains	2400 Approx. psi
Skeet	⅞	1,200	Rem. 209	Rem. RXP20			16.5	10,800	16.5	10,200				
				Win. WAA20			16.5	11,200						
				Hornady Versalite					16.5	10,900				
			Fed. 209	Rem. RXP20			16.0	11,500	16.5	10,700				
			CCI 209M	Rem. RXP20			16.5	10,900	17.5	11,300				
			Win. 209	Rem. RXP20					17.5	10,900				
2½	1	1,165	Rem. 209	Rem. SP20							21.0	11,500		
				Win. WAA20F1							21.5	11,100		
			Fed. 209	Rem. SP20							21.5	10,500		
			CCI 209M	Rem. SP20							22.0	10,500		
			Win. 209	Rem. SP20							22.0	11,300		
2¾	1	1,220	Fed. 209	Activ W32									29.5	10,500

20-Gauge, 2¾-in. Remington SP with Plastic Base Wad

Dram Equiv.	Shot Wt. (ounces)	Velocity (fps)	Primer	Wad	Red Dot Grains	Red Dot Approx. psi	Green Dot Grains	Green Dot Approx. psi	Unique Grains	Unique Approx. psi	Herco Grains	Herco Approx. psi	Blue Dot Grains	Blue Dot Approx. psi
Skeet	⅞	1,200	Rem. 209	Rem. RXP20					16.5	9,100				
				Win. WAA20					16.5	9,800				
2½	1	1,165	Rem. 209	Rem. SP20							17.5	11,300		
				Win. WAA20F1							17.5	10,700		
2¾	1	1,220	Rem. 209	Rem. SP20									23.0	10,300
				Win. WAA20F1									24.0	10,100

20-Gauge, 2¾-in. Winchester-Western Plastic XPert Ranger Shells (Polyformed Shell)

Dram Equiv.	Shot Wt. (ounces)	Velocity (fps)	Primer	Wad	Red Dot Grains	Red Dot Approx. psi	Green Dot Grains	Green Dot Approx. psi	Unique Grains	Unique Approx. psi	Herco Grains	Herco Approx. psi	Blue Dot Grains	Blue Dot Approx. psi
2¼	⅞	1,155	Win. 209	Fed. 20S1					14.5	9,700				
				Win. WAA20					14.5	9,800				
Skeet	⅞	1,200	Win. 209	Fed. 20S1					15.5	10,800				
				Rem. RXP20					15.5	9,700				
				Win. WAA20					15.5	10,700				
2½	1	1,165	Win. 209	Rem. RXP20					16.0	11,100				

20-Gauge, 2¾-in. Winchester-Western Plastic AA-Type Shells

Dram Equiv.	Shot Wt. (ounces)	Velocity (fps)	Primer	Wad	Red Dot Grains	Red Dot Approx. psi	Green Dot Grains	Green Dot Approx. psi	Unique Grains	Unique Approx. psi	Herco Grains	Herco Approx. psi	Blue Dot Grains	Blue Dot Approx. psi
2¼	¾	1,200	Win. 209	Win. WAA20	12.0**	10,900	14.0*	10,800	15.5*	9,100				
				Fed. 20S1	12.0**	11,100	14.0*	9,900	15.5	9,700				
				Rem. RXP20	12.5**	10,800	14.0*	10,200	15.5*	9,900				
2¼	⅞	1,155	Win. 209	Fed. 20S1			14.0	10,300	15.0	10,100				
				Rem. RXP20			14.5	9,900	15.0	8,700				
				Win. WAA20			14.0	10,300	15.0	9,800				
				Lage Uniwad			14.0	11,400	15.5	10,500				
				PC20			13.5	11,200						
			CCI 109	Fed. 20S1			14.0	9,500	15.5	9,600				
				Rem. RXP20			14.5	9,300	15.5	7,800				
				Win. WAA20			14.0	10,000	15.5	9,200				
				Lage Uniwad			14.0	10,900	16.0	10,100				
			CCI 209M	Win. WAA20					15.0	10,200				
Skeet	⅞	1,200	Win. 209	Fed. 20S1			14.5	10,300	15.5	10,400	16.5	10,700		
				Rem. RXP20			15.0	10,000	16.0	9,000	16.5	9,000		
				Win. WAA20			14.5	10,600	16.0	10,500	16.5	9,600		
				PC20					16.0	11,200	16.5	11,300		
			CCI 109	Fed. 20S1			14.5	10,500	16.0	10,000	16.5	10,200		
				Rem. RXP20			15.0	10,000	16.0	9,900	16.5	8,800		
				Win. WAA20			14.5	10,300	16.0	10,700	16.5	10,200		
				Lage Uniwad					16.5	10,800				
			CCI 209M	Win. WAA20							17.5	10,000		
2½	1	1,165	Win. 209	Rem. RXP20							16.5	9,600		
				Rem. SP20							16.5	10,000		
				Win. WAA20							16.5	10,400		
2¾	1	1,220	Win. 209	Rem. RXP20									23.0	11,300
				Rem. SP20									23.5	11,400
				Win. WAA20F1									23.0	11,500

20-Gauge, 3-in. Winchester-Western Plastic AA-Type Shells

Dram Equiv.	Shot Wt. (ounces)	Velocity (fps)	Primer	Wad	Herco Grains	Herco Approx. psi	Blue Dot Grains	Blue Dot Approx. psi	2400 Grains	2400 Approx. psi
3	1⅛	1,255	Win. 209	Rem. SP20			26.0	10,600		
3	1⅛	1,230	Win. 209	Win. WAA20F1			25.5	11,100		
				Rem. SP20			25.5	11,000		
2¾	1¼	1,135	Win. 209	Win. WAA20F1			23.0	10,200		
				Rem. SP20			24.0	10,900		
3	1¼	1,190	Win. 209	Rem. SP20			25.0	11,500		
3¼	1¼	1,240	Win. 209	Rem. SP20					34.5	9,600

20-Gauge, 2¾-in. Activ Shells

Dram Equiv.	Shot Wt. (ounces)	Velocity (fps)	Primer	Wad	Red Dot Grains	Red Dot Approx. psi	Green Dot Grains	Green Dot Approx. psi	Unique Grains	Unique Approx. psi	Herco Grains	Herco Approx. psi	Blue Dot Grains	Blue Dot Approx. psi
Skeet	⅞	1,200	CCI 209M	Fed. 20S1							18.0	9,500		
				Hornady Versalite							18.0	9,800		
				Win. WAA20							18.0	9,500		
				Rem. RXP20							18.5	9,500		
			Win. 209	Hornady Versalite							18.5	9,300		
			Fed. 209	Hornady Versalite							18.0	9,300		
			Rem. 209	Hornady Versalite							18.0	9,500		
2½	1	1,165	CCI 209M	Activ W28							16.5	10,000		
				Fed. 20S1							17.5	10,300		
				Win. WAA20							18.0	11,300		
				Hornady Versalite							16.5	10,800		
				Rem. RXP20							18.5	10,900		
			Rem. 209	Activ W28							17.0	10,900		
			Win. 209	Activ W28							18.0	10,700		

20-Gauge, 2¾-in. Fiocchi Shells

Dram Equiv.	Shot Wt. (ounces)	Velocity (fps)	Primer	Wad	Red Dot Grains	Red Dot Approx. psi	Green Dot Grains	Green Dot Approx. psi	Unique Grains	Unique Approx. psi	Herco Grains	Herco Approx. psi	Blue Dot Grains	Blue Dot Approx. psi
2¼	⅞	1,155	Fio. 616	Fed. 20S1			15.0	9,100	17.0	9,100				
				Hornady Versalite			15.5	9,700	18.0	8,300				
				Lage Uniwad			15.5	9,500	17.5	8,600				
			Fed. 209	Fed. 20S1			14.5	11,100	15.5	10,000				
			Rem. 209	Fed. 20S1			14.5	10,000	16.0	9,400				
			Win. 209	Fed. 20S1			14.5	10,600	16.5	9,000				
			CCI 209M	Fed. 20S1			14.5	10,500	16.0	9,200				
			Fio. 616	Fed. 20S1			14.5	10,400	16.0	9,500				
Skeet	⅞	1,200	Fio. 615	Fed. 20S1			16.0	10,900	18.0	9,700	18.0	9,200		
				Rem. RXP20			16.5	10,300			19.0	8,500		
				Win. WAA20			16.0	10,800	17.5	9,600	18.5	8,700		
				Hornady Versalite			16.0	10,000			19.0	8,300		
				Lage Uniwad			17.5	8,200	19.0	8,000				
			Fio. 616	Fed. 20S1			15.5	10,600	17.5	10,000	18.0	9,200		
			Fed. 209	Fed. 20S1			15.5	11,100	17.0	10,800	17.5	10,200		
			Win. 209	Fed. 20S1			16.0	10,400	16.0	10,100	18.0	9,900		
			Rem. 209	Fed. 20S1			15.5	10,800			16.5	9,900		
			CCI 209M	Fed. 20S1			15.5	10,700	17.0	10,000	17.0	9,900		
2¾	1	1,220	Fio. 616	Rem. SP20									24.5	10,300
			Fio. 615	Rem. SP20									27.5	9,200
			Fed. 209	Rem. SP20									23.0	10,300
			Rem. 209	Rem. SP20									22.5	10,600
			CCI 209M	Rem. SP20									24.0	10,700
3	1	1,275	Fio. 616	Rem. SP20									26.0	10,800
			Fed. 209	Rem. SP20									25.0	10,300
			Win. 209	Rem. SP20									26.0	10,600
2¾	1⅛	1,175	Fio. 616	Rem. SP20									23.5	10,000
			Fed. 209	Rem. SP20									23.5	10,700
			Win. 209	Rem. SP20									23.5	11,400

28-Gauge, 2¾-in. Federal Plastic Target Shells

Dram Equiv.	Shot Wt. (ounces)	Velocity (fps)	Primer	Wad	Red Dot Grains	Red Dot Approx. psi	Green Dot Grains	Green Dot Approx. psi	Unique Grains	Unique Approx. psi	Herco Grains	Herco Approx. psi	Blue Dot Grains	Blue Dot Approx. psi
Skeet	¾	1,200	Fed. 209	Fed. 28S1A					13.5	11,600	14.0	11,700	17.5	9,600
				Rem. SP28			12.5	11,800	13.0	11,200	13.0	10,100	18.0	9,900
				Win. WAA28					13.5	10,500	14.0	10,900	17.5	8,700
			CCI 109	Rem. SP28			13.0	10,000	13.5	9,400	14.5	10,000	18.5	9,800
				Win. WAA28					14.0	10,400	15.0	10,500		
2¼	¾	1,295	Fed. 209	Rem. SP28									20.0	10,900

28-Gauge, 2¾-in. Remington-Peters Plastic Target Shells

Dram Equiv.	Shot Wt. (ounces)	Velocity (fps)	Primer	Wad	Red Dot Grains	Red Dot Approx. psi	Green Dot Grains	Green Dot Approx. psi	Unique Grains	Unique Approx. psi	Herco Grains	Herco Approx. psi	Blue Dot Grains	Blue Dot Approx. psi
Skeet	¾	1,200	Rem. 209P	Fed. 28S1A					13.5	11,300	14.5	11,200	18.0	9,200
				Rem. SP28			12.0	10,500	13.0	9,100	14.0	8,700	18.0	7,600
				Win. WAA28			12.0	10,300	13.0	8,900	14.0	8,800	18.0	7,700
			CCI 109	Fed. 28S1A			13.0	11,800	14.0	10,900	14.5	10,700	18.5	10,100
				Rem. SP28			12.0	10,200	13.0	9,100	14.0	8,900	18.0	7,500
				Win. WAA28			12.0	10,400	13.0	9,100	14.0	8,300	18.0	7,300
2¼	¾	1,295	Rem. 209P	Rem. SP28					15.0	10,600	16.5	10,300	21.0	9,700

28-Gauge, 2¾-in. Winchester-Western Plastic AA-Type Shells

Dram Equiv.	Shot Wt. (ounces)	Velocity (fps)	Primer	Wad	Red Dot Grains	Red Dot Approx. psi	Green Dot Grains	Green Dot Approx. psi	Unique Grains	Unique Approx. psi	Herco Grains	Herco Approx. psi	Blue Dot Grains	Blue Dot Approx. psi
Skeet	¾	1,200	Win. 209	Win. WAA28			12.5	11,900	13.0	9,400	14.0	8,400		
			CCI 109	Win. WAA28					13.0	8,400	14.0	7,900		

.410 Bore 2½-in. Plastic Shells

Shell	Shot Weight (ounces)	Velocity (fps)	Primer	Wad	2400 Grains	2400 Approx. psi
Federal	½	1,200	Fed. 209	Fed. 410SC	13.5	11,900
				Rem. SP410	13.0	11,500
				Win. WAA41	13.0	11,300
			Fed. 410	Fed. 410SC	13.5	12,000
Rem.-Peters	½	1,200	Rem. 97★	Rem. SP410	13.0	11,500
				Fed. 410SC	13.5	11,400
				Win. WAA41	14.0	11,500
			CCI 209	Rem. SP410	14.5	10,500
				Fed. 410SC	14.0	10,600
				Win. WAA41	14.5	10,300
			CCI 209M	Rem. SP410	13.5	11,000
Winchester-Western AA-Type	½	1,200	Win. 209	Win. WAA41	13.0	11,700
			CCI 209	Fed. 410SC	13.0	12,100
				Rem. SP410	13.5	12,000

.410 Bore 3-in. Plastic Shells

Shell	Shot Weight (ounces)	Velocity (fps)	Primer	Wad	2400 Grains	2400 Approx. psi
Rem.-Peters	11/16	1,135	Rem. 97★	Rem. SP410	14.5	13,000
				Fed. 410SC	14.5	12,600
				Win. WAA41	14.5	12,300
			Fed. 410	Rem. SP410	14.0	12,700
			CCI 209M	Rem. SP410	14.5	12,200

10-Gauge 3½-in. Buckshot Loads

Primer	Shell	No. and Size Buckshot	Velocity (fps)	Wad	Herco Grains	Herco Approx. psi	Blue Dot Grains	Blue Dot Approx. psi
Fed. 209	Federal Plastic	40-4's	1,275	SP10+.270 in. 20 ga. Card			45.0	10,100
		17-0's	1,300	SP10+.135 in. 20 ga. Card			46.0	10,000
Rem. 57★	Remington Plastic	40-4's	1,275	SP10+.270 in. 20 ga. Card			46.0	10,100
		17-0's	1,300	SP10+.135 in. 20 ga. Card			48.5	9,800
Win. 209	Winchester-Western Plastic	40-4's	1,275	SP10+.270 in. 20 ga. Card			47.5	10,000
		17-0's	1,300	SP10			51.0	9,500

12-Gauge 2¾-in. Buckshot Loads

Primer	Shell	No. and Size Buckshot	Velocity (fps)	Wad	Herco Grains	Herco Approx. psi	Blue Dot Grains	Blue Dot Approx. psi
Fed. 209	Federal Hi Power Plastic	34-4's	1,250	Card .135+3/16 Fiber+Card .135			37.0	10,700
		9-00's	1,325	Card .135+¼+3/16+½ Fiber	30.0	9,400		
Win. 209	Winchester-Western	34-4's	1,250	Card .135+3/16+Card .135			39.0	10,900
	AA-Type	9-00's	1,325	Card .135+¼+¼ Fiber	30.0	10,000		
Rem. 97★	Rem. RXP Plastic	9-00's	1,325	Card .135+¼+3/16 Fiber	29.0	10,100		

12-Gauge 3-in. Buckshot Loads

Primer	Shell	No. and Size Buckshot	Velocity (fps)	Wad	Herco Grains	Herco Approx. psi	Blue Dot Grains	Blue Dot Approx. psi	2400 Grains	2400 Approx. psi
Fed. 209	Fed. Hi Power	33-4's	1,250	Bal. Prod. GS&SC			37.0	10,500	50.0	8,100
		18-1's	1,225	Bal. Prod. GS&SC			36.0	9,700		
		12-0's	1,275	RP12+.200 in. 20 ga. Card	31.5	9,800				
Rem. 97★	Rem. Unibody	33-4's	1,250	Bal. Prod. GS&SC					46.0	9,400
		18-1's	1,225	Bal. Prod. GS&SC			35.5	9,800		
		12-0's	1,275	RP12+.200 in. 20 ga. Card	29.5	10,000				
Win. 209	Winchester-Western	33-4's	1,250	Bal. Prod. GS&SC					46.5	9,000
	AA-Type	33-4's	1,300						49.0	9,800
		18-1's	1,225	Bal. Prod. GS&SC			34.5	9,900		
		18-1's	1,300						50.5	9,200
		12-0's	1,275	RP12+.200 in. 20 ga. Card			37.5	9,900		

NOTE: Bal. Prod. = Ballistic Products

12-Gauge, 2¾-in. Rifled Slug Loads–Rolled Crimp

Slug Weight, Type	Primer	Shell	Velocity (fps)	Wad	Unique Grains	Unique Approx. psi.	Herco Grains	Herco Approx. psi.
⅞ oz., Cast	Fed. 209	Federal Hi Power Plastic	1,570	Card .135+5⁄16+¼+2 Card .135	33.0	10,000		
				Card .135+5⁄16+2 Card .135			35.5	8,000
	Rem. 97★	Rem. RXP Plastic	1,570	Card .135+¼+¼+2 Card .135	34.0	10,800		
				Card .135+¼+¼ Fiber+2 Card .135			35.0	9,700
	Win. 209	Winchester-Western AA-Type	1,570	Card .135+¼+Fiber+2 Card .135	34.5	9,800		
				Card .135+¼ Fiber+2 Card .135			29.0	8,600
1 oz., Brenneke	Fed. 209	Federal Hi Power Plastic	1,570	Card .135+¼+¼ Fiber			37.0	10,700
	Win. 209	Winchester-Western AA-Type	1,570	Card .135+3⁄16 Fiber +3⁄16			37.0	9,700

12-Gauge, 3-in. Rifled Slug Loads–Rolled Crimp

Slug Weight, Type	Primer	Shell	Velocity (fps)	Wad	Herco Grains	Herco Approx. psi.	Blue Dot Grains	Blue Dot Approx. psi	2400 Grains	2400 Approx. psi.
⅞ oz., Cast	Fed. 209	Fed. Hi Power	1,570	.135 Card+½+⅜+.135 Card	40.0	10,500				
	Rem. 97★	Rem. Unibody	1,570	.135 Card+½+⅜+.135 Card	37.5	10,600				
	Win. 209	Winchester-Western AA-Type	1,570	.135 Card+½+.135 Card	37.5	9,700				
1 oz., Brenneke	Fed. 209	Fed. Hi Power	1,525	.135 Cards(2)+⅜ Filler			45.0	10,400		
	Rem. 97★	Rem. Unibody	1,525	.135 Cards(2)+⅜ Filler					56.5	10,000
	Win. 209	Winchester-Western AA-Type	1,525	.135 Cards(2)+⅜ Filler					57.5	9,400

20-Gauge, 2¾-in. Buckshot Loads

Primer	Shell	No. and Size Buckshot	Velocity (fps)	Wad	Herco Grains	Herco Approx. psi	Blue Dot Grains	Blue Dot Approx. psi
Fed. 209	Federal Hi Power Plastic	18-4's	1,275	Rem. SP20	19.0	11,000	25.0	9,300
		24-3's	1,200	Rem. SP20 Petals Removed			24.0	11,200
		12-1's	1,275	Rem. SP20 Petals Removed			25.5	10,100
Win. 209	Winchester-Western AA-Type	18-4's	1,275	Rem. SP20			24.0	9,600
		12-1's	1,275	Rem. SP20 Petals Removed			25.5	10,400

20-Gauge, 3-in. Buckshot Loads

Primer	Shell	No. and Size Buckshot	Velocity (fps)	Wad	Herco Grains	Herco Approx. psi	Blue Dot Grains	Blue Dot Approx. psi
Fed. 209	Federal Hi Power Plastic	18-3's	1,220	Rem. RXP20	19.5	8,400		
		21-3's	1,220	Rem. SP20			26.0	7,800
Rem. 97★	Rem.-Peters Plastic (Old Style)	18-3's	1,220	Win. WAA20F1	19.5	8,300		
		21-3's	1,220	Win. WAA20F1			26.0	8,500
			1,220	Rem. SP20			26.0	8,700
Win. 209	Winchester-Western AA-Type	18-3's	1,220	Win. WAA20F1	19.0	9,500		
		21-3's	1,200	Rem. RP20			25.0	9,400

20-Gauge, 2¾-in. Rifled Slug Loads–Rolled Crimp

Slug Weight, Type	Primer	Shell	Velocity (fps)	Wad	Herco Grains	Herco Approx. psi.
⅝ oz., Cast	Fed. 209	Fed. Hi Power	1,570	.125 Card+½ in. Fiber+2 Card .125 each	25.5	9,800
	Win. 209	Win. WAA-Type	1,570	.125 Card+½ in. Fiber+2 Card .125 each	25.5	10,200

Pistol and Revolver Loads

Cartridge/Bullet	Primer	Min. OAL (inches)	Bbl Length	Bullseye			Red Dot			American Select			Green Dot			Unique			Power Pistol			Herco			Blue Dot			2400		
				Chg Wt	fps	psi	Chg Wt	fps	psi	Chg Wt	fps	psi	Chg Wt	fps	psi	Chg Wt	fps	psi	Chg Wt	fps	psi	Chg Wt	fps	psi	Chg Wt	fps	psi	Chg Wt	fps	psi
.25 Auto																														
50 FMC	Rem. SP 1½	0.875	2.0	1.3	760	15,000	1.1	740	15,500				1.4	785	15,400	1.7	760	14,800				1.7	735	15,600						
.32 Auto																														
71 FMC	Rem. SP 1½	0.984	4.0	2.2	835	12,500	2.1	805	12,900				2.3	810	11,900	2.5	820	11,200				3.2	880	13,500						
.32 H&R Magnum																														
85 JHP	Fed. 100	1.320	5.0	3.4	1,020	18,700	3.4	1,030	19,200				3.5	1,035	19,500	4.1	1,050	18,700				4.6	1,060	18,900	6.6	1,100	19,000			
90 LWC (target)		1.100	5.0	2.2	800	9,500	2.1	800	9,400				2.2	805	9,600	2.5	800	8,400				2.8	805	8,500	3.7	805	7,800			
90 LWC		1.180	5.0	3.3	1,060	19,600	3.1	1,020	20,000				3.3	1,050	20,400	3.7	1,110	20,300				4.0	1,070	20,400	5.1	1,150	20,300	6.2	1,150	20,400
98 LRN		1.320	5.0	3.4	1,020	19,500	3.1	980	19,700				3.5	1,010	19,600	4.0	1,000	19,000												
9x18mm Makarov																														
95 JHP	Win. W.S.P.	0.965	4.0	3.6	970	21,200													4.7	1,010	21,600									
100 FPJ	1½-108	0.965	4.0	3.6	960	21,100	3.1	905	21,300				3.5	925	21,300				4.7	995	21,400									
100 LRN		0.965	4.0	3.2	920	21,000	2.7	865	21,300				3.2	910	21,600	4.3	985	20,900	4.2	950	21,600									
9mm Luger																														
95 FMJ	Win. W.S.P.	1.055	4.0	5.5	1,295	31,400	5.3	1,285	32,100				5.5	1,240	25,500	6.5	1,250	26,400	7.8	1,445	32,900	6.8	1,225	24,400	8.3	1,180	22,000			
115 FMJ	1½-108	1.120	4.0	5.0	1,180	31,000	4.5	1,150	32,600				4.7	1,150	30,000	6.1	1,185	30,100	6.7	1,280	33,500	6.3	1,180	28,700	8.0	1,190	29,200			
125 L		1.150	4.0	4.9	1,165	32,100	4.5	1,145	32,000				5.2	1,165	32,100	6.0	1,165	29,400				6.2	1,165	28,500	8.2	1,190	29,700			
125 FMJ		1.150	4.0	4.9	1,155	32,000	4.6	1,145	33,000				5.2	1,150	32,100	6.2	1,170	31,300	6.6	1,235	34,000	6.5	1,180	32,700	8.2	1,170	29,900			
147 XTP		1.140	4.0	4.2	1,010	32,900	3.4	895	32,400				3.7	930	32,200	4.4	1,010	32,700	5.7	1,095	34,000	4.9	1,010	30,500	6.2	1,050	30,200			
.357 Magnum																														
110 JHP	Fed. 200	1.560	5.6	9.0	1,690	31,700	7.7	1,560	34,000				10.0	1,660	31,300	10.0	1,735	34,100	9.7	1,690	34,000	13.0	1,885	33,300	16.0	2,040	33,800			
125 JSP		1.570	5.6	8.4	1,550	32,800	7.0	1,410	34,000				7.3	1,415	33,600	9.6	1,585	33,800	9.2	1,555	33,500	9.8	1,590	33,600	14.5	1,795	34,000	17.6	1,810	31,800
148 LWC (target)		1.330	5.6	2.8	780	10,000	2.7	775	12,400				2.8	780	14,100	3.3	775	10,000												
148 LWC		1.330	5.6	5.7	1,475	34,000	4.6	1,300	33,600				5.1	1,310	34,000	6.4	1,465	33,800				6.7	1,510	33,900	10.0	1,625	33,800	12.2	1,675	33,800
158 LSWC		1.580	5.6	6.5	1,320	33,900	5.5	1,215	34,000				6.0	1,240	34,000	6.8	1,295	33,900				7.9	1,365	33,900	10.3	1,490	33,600	15.3	1,620	34,000
158 JSP		1.575	5.6	6.8	1,250	33,100	6.0	1,160	33,400				7.0	1,215	34,000	7.8	1,280	33,200	8.0	1,305	33,800	8.2	1,305	34,000	10.7	1,420	33,300	15.2	1,535	33,100
170 FMJ		1.585	5.6	6.2	1,175	33,900	5.4	1,025	33,600				6.1	1,090	33,700	6.8	1,175	33,600	8.0	1,195	33,300	7.0	1,175	33,500	9.7	1,310	33,800	12.1	1,365	33,600
180 JFP		1.580	5.6	6.3	1,135	34,000	5.3	930	33,200				6.0	1,010	34,000	7.0	1,125	33,800	7.0	1,145	33,800	7.2	1,110	34,000	9.7	1,260	33,300	12.5	1,300	32,700
200 LRN		1.575	5.6	5.3	1,085	33,900	4.6	990	33,600				5.0	1,015	34,000	6.0	1,105	33,900				6.1	1,105	33,900	8.2	1,225	33,900	10.0	1,245	32,800
.38 Super Auto +P																														
115 JHP	Rem. SP 1½	1.255	5.0	5.5	1,240	33,900	4.7	1,155	33,500				5.7	1,225	33,800	6.6	1,265	33,800	7.3	1,345	34,400	6.8	1,260	34,000	10.2	1,360	33,000			
130 FMJ		1.260	5.0	5.1	1,170	33,600	4.5	1,095	33,900				5.2	1,135	33,600	6.2	1,200	34,000	6.8	1,255	34,600	6.3	1,180	33,500	9.1	1,265	32,500			
147 XTP		1.275	5.0	5.0	1,095	34,000	4.5	1,035	34,000				4.7	1,045	33,500	5.8	1,105	34,000	6.2	1,155	34,900	6.4	1,135	33,800	8.6	1,220	33,900	10.9	1,215	33,600
158 L		1.275	5.0	4.6	1,030	33,600	4.0	985	34,000				4.9	1,025	33,900	5.9	1,085	33,800				6.0	1,080	33,100	8.3	1,190	33,900			
.38 Special																														
110 JHP	Fed. 100	1.430	5.6	4.5	1,085	14,900	4.0	1,000	15,800				4.6	1,050	16,000	5.6	1,090	15,400				5.6	1,090	15,800	7.8	1,170	15,700			
125 JSP		1.440	5.6	4.4	1,000	15,300	3.9	950	15,600				4.3	985	15,900	5.3	1,015	16,000				5.5	1,040	16,000	7.3	1,035	15,600			
148 LWC (target)		1.180	5.6	2.7	785	14,600	2.3	730	14,800				2.7	765	14,600	3.2	775	14,100												
148 LWC		1.180	5.6	2.8	815	15,900	2.5	750	15,500				2.9	800	15,900	3.3	815	15,300				3.5	820	16,000	5.3	810	13,600			
158 LSWC		1.420	5.6	3.6	910	15,500	3.1	835	15,800				3.5	870	15,600	4.3	920	16,000				4.5	930	15,800	6.1	955	15,600	7.5	990	15,500
160 JSP		1.435	5.6	3.5	805	15,600	3.2	715	15,700				3.4	750	15,800	4.2	800	15,600				4.4	805	16,000	6.2	845	15,800	7.6	850	15,900
200 LRN		1.540	5.6	3.0	760	15,100	2.8	725	15,100				3.1	750	15,500	3.6	780	15,700				3.8	785	15,500	5.3	850	16,000	7.0	870	15,800
.38 Special +P																														
90 JHP	Fed. 100	1.410	5.6	5.5	1,340	17,000	4.5	1,245	17,000				5.1	1,260	16,900	6.3	1,300	16,800				6.5	1,310	17,100	9.1	1,345	16,900			
110 JHP		1.430	5.6	5.0	1,175	17,400	4.2	1,040	17,500				4.8	1,100	17,400	5.9	1,160	17,500	6.5	1,200	17,100	5.9	1,150	17,500	8.2	1,205	16,800			
125 JSP		1.445	5.6	4.8	1,090	17,500	4.1	965	17,000				4.6	1,015	17,500	5.6	1,070	17,500	6.3	1,165	17,200	5.8	1,050	16,900	7.5	1,065	16,900			
158 LSWC		1.420	5.6	3.8	945	17,200	3.2	855	16,800				3.7	910	17,200	4.5	950	17,100				4.7	965	17,300	6.3	995	17,000	7.8	1,035	17,400
160 JSP		1.435	5.6	3.7	820	17,100	3.3	750	17,400				3.6	770	17,300	4.4	885	17,100	4.9	880	17,300	4.6	835	17,200	6.3	905	17,400	7.8	910	17,500
200 LRN		1.540	5.6	3.3	795	17,100	2.9	750	17,000				3.2	775	17,100	3.7	800	17,100				4.0	825	17,000	5.5	885	17,100	7.1	890	17,500

See Special Reloading Precautions on page 56. See NOTES and KEY on page 46.

continued on next page

Cartridge/Bullet	Primer	Min. OAL (inches)	Bbl Length	Bullseye Chg Wt	Bullseye fps	Bullseye psi	Red Dot Chg Wt	Red Dot fps	Red Dot psi	American Select Chg Wt	American Select fps	American Select psi	Green Dot Chg Wt	Green Dot fps	Green Dot psi	Unique Chg Wt	Unique fps	Unique psi	Power Pistol Chg Wt	Power Pistol fps	Power Pistol psi	Herco Chg Wt	Herco fps	Herco psi	Blue Dot Chg Wt	Blue Dot fps	Blue Dot psi	2400 Chg Wt	2400 fps	2400 psi
.380 Auto																														
88 JHP	Win.	0.960	3.7	3.2	980	14,300	3.1	965	14,600				3.4	940	14,600	4.0	920	13,600				4.1	995	14,900	6.0	1,000	14,700			
90 JHP	1½-108	0.960	3.7	3.0	940	12,900	3.1	940	14,300				3.2	890	12,800	4.0	940	14,000				4.0	960	14,800	6.0	980	14,800			
90 XTP		0.960	3.7																4.8	1,105	21,500									
95 FMJ		0.975	3.7	3.2	900	14,700	3.1	885	14,900				3.5	890	14,700	4.2	910	14,600	4.7	1,065	21,000	4.4	910	14,600	6.5	910	14,200			
100 FMJ-RN		0.975	3.7	3.3	985	20,100	2.8	920	19,900				3.1	955	20,000	4.3	1,005	19,500	4.6	1,035	20,600									
.38/40 Win.																														
150 gr. Sierra JHP	Rem. 2½	1.585	5.6	6.5	960	12,600	6.2	910	12,800				6.8	950	12,700	8.2	990	13,200				9.2	995	13,100	11.8	1,020	13,100	14.1	970	13,100
180 gr. Sierra JHP		1.585	5.6	5.6	820	12,200	5.1	740	12,500				5.6	745	12,700	6.9	815	13,200				7.3	795	13,100	10.3	875	13,200	13.0	875	13,400
200 gr. Hornady FMJ/FP		1.585	5.6	5.3	750	12,400	4.8	685	12,400				5.5	730	12,500	6.7	765	13,100				7.3	785	13,300	9.9	840	13,500	12.7	830	13,500
.357 Sig.																														
90 JHP	Fed. 100	1.090	4.0	9.3	1,660	37,100	7.1	1,495	35,400				7.8	1,545	36,500	9.2	1,615	37,100	11.4	1,715	37,000	10.1	1,625	34,600	12.8	1,690	35,300			
115 JHP		1.150	4.0	8.0	1,435	36,400	6.4	1,285	37,100				6.9	1,305	37,000				10.0	1,505	36,200	8.7	1,400	36,600	11.3	1,495	37,400			
124 TMJ		1.195	4.0	7.0	1,325	37,000	6.0	1,215	37,200				6.5	1,255	36,800				9.5	1,435	37,200	8.3	1,345	37,600	10.6	1,405	36,900			
147 XTP		1.138	4.0	5.8	1,145	36,800							4.8	1,010	37,100	5.8	1,110	37,200	7.8	1,245	37,000	6.4	1,140	37,600	8.2	1,205	35,800			
.40 S&W Auto																														
135 JHP	Win.	1.105	4.0	7.6	1,350	33,600	6.7	1,280	33,200				7.5	1,330	33,100	8.5	1,290	26,600	9.3	1,340	34,000									
150 JHP	1½-108	1.105	4.0	6.7	1,225	34,000	5.9	1,155	34,000				6.2	1,175	33,800	8.0	1,245	34,000	8.2	1,215	33,300	8.2	1,215	33,900	11.5	1,285	34,000			
170 XTP		1.124	4.0	5.5	1,015	33,500	5.1	985	34,000				5.6	1,045	33,700	6.7	1,075	33,800	7.3	1,105	33,300	7.4	1,125	34,000	9.8	1,170	33,900	12.1	1,110	33,600
180 JHP		1.125	4.0	5.5	1,015	33,900	5.0	980	34,000				5.3	1,010	33,600	6.4	1,065	33,800	6.9	1,050	33,700	7.0	1,045	34,000	8.8	1,065	34,000	10.9	1,025	33,900
190 JHP		1.130	4.0	5.4	955	34,000	4.9	895	33,600				5.1	955	33,600	6.1	1,010	34,000	6.9	1,020	33,100	6.7	1,000	33,800	8.7	1,040	33,800	10.6	975	33,600
200 FMJ		1.130	4.0	4.6	945	33,600	4.1	890	33,500				4.3	890	33,600	5.3	955	33,900	6.3	960	33,700	5.8	955	34,000	7.9	960	33,800	8.5	925	33,600
10mm Auto																														
135 JHP	Fed. 150	1.250	5.5																10.6	1,530	35,600									
150 JHP		1.250	5.5																9.7	1,415	35,600									
155 HP		1.250	5.5	6.7	1,190	34,000										7.5	1,200	33,800				8.2	1,230	33,800	11.5	1,340	34,100	13.6	1,270	33,600
155 L		1.250	5.5																9.5	1,320	33,000									
170 HP		1.250	5.5	6.2	1,135	34,000										6.9	1,135	34,100				7.5	1,145	33,600	10.1	1,180	33,500	12.6	1,190	33,800
180 JHP		1.250	5.5	6.4	1,125	35,900										7.0	1,125	35,700	8.7	1,240	34,900	7.5	1,140	35,800	10.4	1,220	35,800	12.9	1,210	36,000
180 L		1.250	5.5																8.7	1,235	34,700									
190 JFP		1.250	5.5	6.3	1,050	35,500										6.7	1,025	35,500	8.2	1,200	35,900	7.2	1,050	35,800	10.0	1,185	36,000	12.5	1,195	35,800
200 FMJ		1.260	5.5	5.3	940	33,600										5.8	940	33,700	7.7	1,145	35,600	6.5	965	33,500	8.9	1,110	33,800	11.2	1,115	34,100
.41 Rem. Magnum																														
200 HP	Rem. 2½	1.580	5.8	8.0	1,235	35,700	7.5	1,200	33,400				8.3	1,170	35,000	10.0	1,280	35,700				10.1	1,320	35,900	14.0	1,470	36,000	17.5	1,420	34,700
210 JSP		1.575	5.8	8.3	1,245	34,300	8.2	1,225	34,300				8.7	1,165	35,800	10.1	1,265	35,400				10.3	1,320	34,800	13.5	1,425	33,800	17.5	1,425	33,900
220 JHP		1.575	5.8	7.5	1,150	35,800	7.4	1,125	35,900				7.9	1,140	35,800	9.3	1,215	35,300				9.3	1,220	35,800	12.5	1,365	35,800	16.4	1,365	34,300
.44 S&W Special					c.u.p.			c.u.p.						c.u.p.			c.u.p.						c.u.p.			c.u.p.			c.u.p.	
180 JHC	Win. 7-111	1.600	5.6	6.5	910	12,000	6.4	885	12,100				6.7	925	12,400	9.0	985	12,500				9.8	1,000	12,600	13.5	1,020	11,900	16.0	950	11,400
					c.u.p.			c.u.p.						c.u.p.			c.u.p.						c.u.p.			c.u.p.			c.u.p.	
246 LRN		1.590	5.6	4.5	765	11,700	4.3	740	11,900				5.0	785	11,900	6.0	800	11,700				7.7	805	12,100	9.2	845	12,300	11.3	805	11,500
.44/40 Win.	Rem. 2½				c.u.p.			c.u.p.						c.u.p.			c.u.p.						c.u.p.			c.u.p.			c.u.p.	
200 JSP		1.590	24	6.6	1,070	12,300	5.9	920	12,400				6.6	990	12,200	8.0	1,090	12,400				8.5	1,100	12,500	12.0	1,225	12,500	14.5	1,230	12,500
					c.u.p.			c.u.p.						c.u.p.			c.u.p.						c.u.p.			c.u.p.			c.u.p.	
240 L		1.580	24	5.0	850	12,200	4.7	800	12,300				5.5	850	12,200	6.7	950	12,500				7.1	955	12,400	9.9	1,125	12,500	12.0	1,130	12,500
.44 Rem. Magnum																														
180 JHC	Fed. 150	1.585	5.7	11.5	1,520	33,400	10.0	1,410	34,600				11.3	1,470	34,600	13.0	1,550	35,000				13.6	1,560	34,900	19.0	1,725	34,000	23.3	1,760	33,700
200 JHP		1.575	5.7	11.0	1,420	34,000	9.7	1,320	34,800				10.7	1,370	34,500	13.0	1,475	34,400				13.0	1,455	34,500	17.0	1,565	33,400	23.2	1,665	34,300
225 JHP		1.575	5.7	9.5	1,270	34,600	8.2	1,185	34,600				9.2	1,220	34,700	10.7	1,290	34,800				11.0	1,285	34,700	15.2	1,445	34,900	20.5	1,510	34,400
240 L (GC)		1.600	5.7	9.8	1,175	34,400	8.8	1,175	34,900				9.5	1,170	34,800	11.8	1,255	35,000				12.5	1,330	33,800	16.6	1,475	34,700	20.6	1,510	34,700
240 JSP		1.585	5.7	8.9	1,215	34,700	7.7	1,090	35,000				8.7	1,190	35,000	10.3	1,250	34,900				10.5	1,245	34,700	14.4	1,380	34,800	18.7	1,440	34,800
265 JFP		1.620	5.7	8.3	1,110	34,800	7.1	1,000	34,800				7.8	1,045	35,000	9.3	1,125	34,600				9.5	1,125	34,700	12.7	1,250	34,600	17.0	1,300	34,600
300 HP/XTP		1.600	5.7	7.5	955	34,800	6.7	855	35,000				6.9	865	35,000	8.3	955	34,800	9.1	1,015	34,500	9.4	1,015	35,000	11.7	1,105	34,200	15.9	1,190	35,000
310 LSWC		1.600	5.7	6.8	975	35,000	5.8	885	34,900				6.2	895	34,600	7.2	965	34,800				8.0	1,005	35,000	10.7	1,110	34,900	13.5	1,150	34,600

See Special Reloading Precautions on page 56. See NOTES and KEY on page 46.

continued on next page

Pistol and Revolver Loads (continued)

Cartridge/Bullet	Primer	Min. OAL (inches)	Bbl Length	Bullseye Chg Wt	Bullseye fps	Bullseye psi	Red Dot Chg Wt	Red Dot fps	Red Dot psi	American Select Chg Wt	American Select fps	American Select psi	Green Dot Chg Wt	Green Dot fps	Green Dot psi	Unique Chg Wt	Unique fps	Unique psi	Power Pistol Chg Wt	Power Pistol fps	Power Pistol psi	Herco Chg Wt	Herco fps	Herco psi	Blue Dot Chg Wt	Blue Dot fps	Blue Dot psi	2400 Chg Wt	2400 fps	2400 psi
.455 Webley						c.u.p.			c.u.p.						c.u.p.			c.u.p			.			c.u.p.						
220 MK IV L	CCI 300	1.000	6.0	3.6	765	12,500	3.4	745	12,400				3.5	755	12,300	4.4	800	12,600				4.8	790	12,700						
265 HB RN L		1.245	6.0	3.8	750	c.u.p. 12,600	3.4	685	c.u.p. 12,300				3.6	690	c.u.p. 12,400	4.3	710	c.u.p. 12,600				4.9	735	c.u.p. 12,700	6.8	770	c.u.p. 12,600			
.45 A.C.P.																													
155 Cast Lead	Federal 150	1.270	5.0	6.9	1,175	19,400	5.8	1,155	18,800				6.6	1,165	19,300	7.8	1,190	19,200				8.5	1,185	19,100						
180 LWC		1.190	5.0	5.4	985	15,800	4.8	900	14,100				5.3	910	14,500	6.0	875	13,400				6.7	950	15,800	9.0	920	13,600			
185 JHP		1.275	5.0	6.7	995	19,400	5.9	940	19,500				6.8	990	19,300	8.2	1,030	18,900	8.6	1,025	18,800	8.2	990	18,500						
200 LSW (target)		1.190	5.0	4.0	790	9,800	4.0	805	9,400				4.3	805	9,900	5.1	810	9,600												
200 JHP		1.175	5.0	6.0	960	19,400	5.2	890	19,200				5.9	915	18,900	7.1	975	19,500	7.4	965	19,900	7.7	955	19,300	10.6	1,000	19,500			
230 L (target)		1.190	5.0	4.0	810	13,900	4.0	810	12,800				4.3	805	13,200	5.0	790	11,800				5.2	815	13,600						
230 JHP		1.230	5.0	5.4	865	19,200	5.0	820	19,500				5.4	845	19,500	6.4	880	19,400				7.0	875	19,500	9.8	915	19,300			
230 FMC		1.190	5.0	5.0	905	16,200	5.0	910	16,200				5.4	920	15,800	6.0	895	16,000	7.2	895	20,000	6.2	890	16,200	8.5	900	16,200			
240 JHP		1.210	5.0	5.0	810	18,900	4.5	770	19,200				5.0	790	19,300	5.9	820	19,200				6.5	820	19,200	8.3	865	19,300			
260 JHP		1.210	5.0	4.5	725	19,400										5.4	760	19,400				5.9	750	18,600	8.3	780	19,000			
240 JHC		1.190	5.0																6.5	835	19,900									
.45 ACP +P																														
185 JHP	Fed. 150	1.190	5.0																9.1	1,075	21,700									
200 JHP		1.190	5.0																8.2	1,030	22,200									
230 FMC		1.190	5.0																7.5	930	22,000									
240 JHC		1.190	5.0																7.1	890	22,200									
.45 Colt						c.u.p.			c.u.p.						c.u.p.			c.u.p.						c.u.p.			c.u.p.			
200 JMPH	Win. 7-111	1.550	7.3	6.0	870	11,800	7.0	915	12,600				8.0	940	12,500	9.0	895	11,600				9.5	895	11,400	13.0	925	11,800			
250L		1.550	7.3	5.4	805	c.u.p. 11,800	6.0	830	c.u.p. 12,000				6.8	855	c.u.p. 12,300	8.0	850	c.u.p. 11,800				9.0	910	c.u.p. 12,600	11.5	890	c.u.p. 12,200			
300 HP/XTP		1.580	7.3	5.0	605	c.u.p. 12,400	4.8	550	c.u.p. 12,200				5.7	645	c.u.p. 12,500	6.8	690	c.u.p. 12,600				7.2	670	c.u.p. 12,500	10.0	730	c.u.p. 12,300	12.5	735	c.u.p. 12,200
.45 Win. Magnum																														
200 JHP	Win. 7-111	1.475	5.0													14.0	1,385	34,500				17.0	1,490	37,000	22.0	1,570	37,200	26.8	1,580	37,200
230 FMJ		1.475	5.0													13.1	1,270	34,900				16.0	1,370	37,500	20.0	1,430	36,900	25.4	1,475	37,300
260 JHP		1.475	5.0													11.5	1,145	34,400				14.5	1,250	37,400	18.6	1,340	36,900	22.5	1,345	37,100

NOTES and KEY pertain to Pistol and Revolver tables.
See Special Reloading Precautions on page 56.

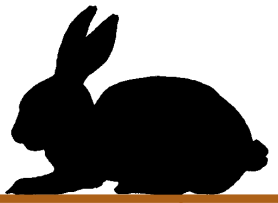
NOTES:

1. *Do not intermix cases of different manufacture, nor bullets, nor primers.*
2. *Be sure that each case is crackfree and completely empty.*
3. *Unless specifically recommended, use standard primers. Magnum primers are neither needed nor recommended for most calibers.*
4. *Do not exceed the powder weight shown, and guard against accidental multiple charges of powder.*
5. *Start with 10% less powder than shown. Work up gradually, watching for signs of high pressure.*
6. *Be sure that every completed cartridge is not shorter than the length listed.*
7. *Watch for signs of case head separation.*

KEY

BR	*=Bench Rest*	*M*	*=Match*	*in.*	*=inches*
FMC	*=Full Metal Case*	*psi*	*=Chamber pressure, piezo system*	*gr.*	*=grains*
FMJ	*=Full Metal Jacket*			*Vel.*	*=velocity*
FN	*=Flat Nose*	*PSP*	*=Pointed Soft Point*	*fps*	*=feet per second*
FP	*=Flat Point*	*RN*	*=Round Nose*	*c.w.*	*=powder charge weight*
FS	*=Fail Safe*	*SB*	*=Solid Base*	*c.u.p.*	*=chamber pressure, in copper units*
GC	*=Gas Check*	*SJ*	*=Semijacketed*		
HB	*=Hollow Base*	*SP*	*=Soft Point*	*Min OAL*	*=minimum overall length, measured from base to tip of bullet*
HC	*=Hollow Cavity*	*Sp. Pt.*	*=Spire Point*		
HP	*=Hollow Point*	*WC*	*=Wad Cutter*		
J	*=Jacketed*	*Wt*	*=weight*		
L	*=Lead*	*Bbl*	*=barrel*		

Silhouette Loads



Cartridge/Bullet	Primer	Min OAL (inches)	Blue Dot Charge Weight (grains)	Blue Dot Velocity (fps)	Blue Dot Chamber Pressure (copper units)	2400 Charge Weight (grains)	2400 Velocity (fps)	2400 Chamber Pressure (copper units)	Reloder 7 Charge Weight (grains)	Reloder 7 Velocity (fps)	Reloder 7 Chamber Pressure (copper units)
.222 Remington (Rem. case)											
50 gr. Sierra Spitzer	Fed. 205M	2.090				12.9	2,425	43,800	19.3	2,700	43,800
53 g. Sierra BRHP		2.104				12.4	2,345	43,800	18.2	2,575	43,500
55 gr. Sierra Spitzer		2.125				12.0	2,250	43,100	17.6	2,495	43,400
60 gr. Hornady Spire Pt.		2.125				12.0	2,180	43,800	17.0	2,400	43,800
68.0 gr. Hornady BTHP		2.125				11.3	1,990	43,800	16.5	2,230	43,200
.223 Remington (Rem. case)											
55 gr. Sierra Spitzer	Fed. 205M	2.250				15.9	2,430	48,500	22.1	2,670	48,900
60 gr. Hornady Spire Pt.		2.250				15.4	2,320	48,500	21.4	2,550	49,500
70 gr. Hornady Spire Pt.		2.250				13.0	1,965	48,600	17.0	2,180	48,800
7mm BR Rem. (Rem. case)											
120 gr. Sierra Spitzer	Rem. 7½ BR	2.300				20.2	2,160	47,100	27.8	2,425	47,400
145 gr. Speer Spitzer		2.300				17.7	1,800	47,200	24.8	2,130	47,800
7mm/08 (Rem. case)											
120 gr. Sierra Spitzer	Fed. 210 BR	2.750				27.5	2,310	48,100	37.2	2,560	48,900
145 gr. Speer Spitzer		2.750				23.5	1,970	48,300	33.0	2,250	48,300
.30-.30 Winchester (Fed. case)											
152 gr. Cast Lead	Fed. LR #210	2.500	13.0	1,525	29,000	16.0	1,650	33,300	25.0	1,950	34,900
170 gr. Rem. SPCL		2.500				16.0	1,500	34,700	23.5	1,800	34,900
.35 Remington (Rem. case)											
158 gr. Hornady L	Fed. LR #210	2.400	15.5	1,574	25,200	21.0	1,715	25,300	28.5	1,875	26,600
170 gr. Sierra FMJ		2.400	13.0	1,300	22,400	17.0	1,450	23,400			
200 gr. Rem. SPCL		2.510				22.0	1,650	31,700	30.0	1,825	31,700
.357 Magnum (Win. case)											
158 gr. Rem. SP	Fed. 200	1.580	12.0	1,600	42,900	14.6	1,640	42,300			
170 gr. Sierra FMJ		1.580	10.7	1,445	41,700	13.2	1,450	43,000			
180 gr. Speer FMJ		1.580	9.6	1,265	42,300	11.8	1,320	42,900			
180 gr. Sierra FPJ		1.580	9.2	1,250	42,400	12.1	1,350	41,700			
.357 Maximum (Rem. case)											
125 gr. Speer JHP	Rem. 7½ BR	1.900	15.0	1,860	38,200	20.5	2,045	38,200			
158 gr. Hornady HP		1.975				18.0	1,790	40,400	26.0	1,845	33,600
160 gr. Speer SP		1.975	15.3	1,760	40,700	17.4	1,775	41,200	26.0	1,830	32,700
170 gr. Sierra FMJ		1.975	14.5	1,675	41,300	16.5	1,670	40,500	25.5	1,840	40,100
180 gr. Sierra FPJ		1.975	14.9	1,610	39,400	16.8	1,590	39,000	25.0	1,760	39,700
200 gr. Speer FMJ		1.975	11.6	1,275	41,300	14.1	1,340	41,300	22.3	1,650	41,400
.44 Rem. Magnum (Rem. case)											
180 gr. Sierra HC	Fed. 150	1.590	18.8	1,875	37,900	23.0	1,910	37,800			
240 gr. Speer FMJ		1.590	15.5	1,550	37,600	18.8	1,560	36,800			
250 gr. Sierra FPJ		1.590	15.0	1,525	36,800	19.0	1,600	37,800			
265 gr. Hornady FP		1.590	14.1	1,420	36,300	17.4	1,460	37,400			

Test barrels were 14 inches long, except .357 Maximum, which was 12½ inches.
See NOTES and KEY on page 55.
See Special Reloading Precautions on page 56.

Centerfire Rifle

Cartridge/Bullet	Primer	Min. OAL (inches)	Case	Bbl Length	2400 Chg Wt	2400 fps	2400 psi	Reloder 7 Chg Wt	Reloder 7 fps	Reloder 7 psi	Reloder 12 Chg Wt	Reloder 12 fps	Reloder 12 psi	Reloder 15 Chg Wt	Reloder 15 fps	Reloder 15 psi	Reloder 19 Chg Wt	Reloder 19 fps	Reloder 19 psi	Reloder 22 Chg Wt	Reloder 22 fps	Reloder 22 psi
.17 Rem.																						
Hornady 25HP	Rem. 7½	2.140	Rem.	24							21.8	3,750	c.u.p. 50,100	22.8	3,915	c.u.p. 50,200						
.22 Hornet																						
Speer 40SP	Win. 6½-116	1.710	Win.	24	7.5	2,250	c.u.p. 41,000	11.0	2,265	c.u.p. 19,800												
Speer 45 Spitz		1.710		24	7.1	2,065	c.u.p. 41,300	10.6	2,170	c.u.p. 20,300												
Hornady 50SPSX		1.710		24	7.0	1,945	c.u.p. 41,700	10.5	2,115	c.u.p. 21,500												
.22/250 Rem.																						
Speer 45 Spitz	Win. 8½-120	2.300	Win.	24							35.5	3,760	59,400									
Hornady 50SPSX		2.350		24							34.3	3,575	58,900									
Hornady 55SPSX		2.350		24							33.3	3,425	59,200	35.3	3,625	59,400						
Hornady 60SP		2.350		24							32.5	3,290	58,500	34.7	3,485	59,400	41.0	3,510	57,800			
.220 Swift																						
Speer 45 Spitz	CCI 200	2.645	Horn.	24							36.6	3,760	c.u.p. 50,100	39.0	4,010	c.u.p. 50,300						
Hornady 50SPSX		2.660		24							36.1	3,675	c.u.p. 50,500	38.6	3,850	c.u.p. 49,800	44.0	3,650	c.u.p. 50,400			
Hornady 55MJBT		2.630		24										38.0	3,775	c.u.p. 50,500	43.9	3,610	c.u.p. 50,500			
Hornady 60 Sp. Pt.		2.680		24										35.8	3,540	c.u.p. 50,400	43.0	3,575	c.u.p. 50,400	43.0	3,565	c.u.p. 49,900
.221 Rem. Fireball																						
Speer 40SP	Rem. 7½	1.800	Rem.	10½	15.5	2,700	c.u.p. 46,500															
Sierra 50 Spitz		1.825		10½	13.8	2,410	c.u.p. 43,500															
Sierra 53BRHP		1.825		10½	13.5	2,320	c.u.p. 43,600															
Nosler 60 Spitz		1.825		10½	13.3	2,200	c.u.p. 46,300	18.1	2,250	c.u.p. 34,000												
.222 Rem.																						
Speer 45 Spitz	Rem. 7½ BR	2.090	Rem.	24				19.8	3,225	47,500	25.0	3,290	46,200									
Sierra 50SMP		2.130		24				20.0	3,115	47,400	24.0	3,120	44,300									
Sierra 55FMJBT		2.130		24							24.0	3,190	47,900	24.3	3,120	47,900						
Hornady 60SPPT		2.130		24										22.5	2,915	47,500						
.222 Rem. Mag.																						
Speer 45 Spitz	Rem. 7½	2.280	Rem.	24				23.0	3,400	c.u.p. 46,500												
Sierra 50 Spitz		2.280		24				22.5	3,250	c.u.p. 45,400												
Sierra 53BRHP		2.280		24				22.0	3,120	c.u.p. 44,500												
Sierra 55 Spitz		2.280		24				22.0	3,100	c.u.p. 46,000												

See NOTES and KEY on page 55.

continued on next page

Cartridge/Bullet	Primer	Min. OAL (inches)	Case	Bbl Length	2400 Chg Wt	2400 fps	2400 psi	Reloder 7 Chg Wt	Reloder 7 fps	Reloder 7 psi	Reloder 12 Chg Wt	Reloder 12 fps	Reloder 12 psi	Reloder 15 Chg Wt	Reloder 15 fps	Reloder 15 psi	Reloder 19 Chg Wt	Reloder 19 fps	Reloder 19 psi	Reloder 22 Chg Wt	Reloder 22 fps	Reloder 22 psi
.223 Rem.																						
Speer 45 Spitz	Fed. 205M	2.210	Fed.	24	14.9	3,030	49,600	21.8	3,375	53,200	28.0	3,470	52,800	28.5	3,635	53,500						
Hornady 50SP		2.250		24	14.5	2,795	48,500	21.5	3,195	53,000	27.0	3,335	52,300									
Sierra 52HPBT		2.250		24				20.9	3,165	53,300	27.5	3,310	52,700	28.3	3,440	53,100						
Hornady 55MJBT		2.215		24	14.0	2,685	49,900	20.5	3,080	52,400	27.5	3,255	52,200	28.0	3,390	53,600						
Hornady 60 Sp. Pt.		2.250		24							25.5	3,070	53,300	26.5	3,240	53,000						
Hornady 68BTHP		2.260		24							24.0	2,935	56,600	25.6	3,030	52,800						
Hornady 75BTHP		2.260	Rem.	24										24.9	2,895	53,400						
Sierra 80HPBT		2.260	Rem.	24										24.0	2,800	53,000						
.225 Win.										c.u.p.												
Win. 50PSP	Win. 8½-120	2.450	Win.	24				22.0	3,130	44,000												
Win. 55PSP		2.450		24				22.0	3,075	c.u.p. 44,500												
.243 Win.																						
Sierra 60HP	Win. 8½-120	2.550	Win.	24				30.2	3,320	54,800	38.5	3,450	56,400									
Speer 75HP		2.610		24							34.0	3,125	57,500									
Speer 80 Spitz		2.685		24							34.0	3,060	57,000	36.5	3,145	57,500	44.5	3,270	57,500			
Sierra 100 Spitz BT		2.700		24													41.0	2,925	57,100	41.7	2,950	57,500
6mm Remington																						
Sierra 60HP	Rem. 9½	2.760	Rem.	24							41.8	3,665	62,800	43.6	3,820	62,700						
Speer 75HP		2.790		24							39.0	3,340	62,200	40.6	3,410	62,300						
Speer 80 Spitz		2.790		24							38.0	3,205	62,300	40.5	3,340	63,000	49.5	3,435	61,700	51.5	3,450	60,900
Sierra 100 Spitz BT		2.800		24													46.0	3,145	62,500	48.0	3,205	62,500
.25-06 Rem.																						
Sierra 75HP	Fed. 210	3.090	Fed.	24							48.0	3,580	59,900									
Speer 87 Spitz		3.090		24							44.5	3,290	59,500	47.2	3,425	61,000	57.3	3,525	59,800			
Speer 100 Spitz		3.200		24										44.9	3,190	61,000	54.3	3,320	61,000	55.9	3,355	61,100
Sierra 120HPBT		3.225		24													50.5	3,025	60,400	52.5	3,080	60,400
.25/20 Win.							c.u.p.			c.u.p.												
Rem. 86SP	CCI 400	1.590	Rem.	24	8.0	1,340	18,300	11.5	1,460	15,000												
.250 Savage													c.u.p.			c.u.p.						
Sierra 75HP	Rem. 9½	2.400	Rem.	24							37.8	3,250	43,800	38.3	3,350	43,700						
Speer 87 Spitz		2.450		24										36.0	3,135	c.u.p. 43,800	41.0	2,940	c.u.p. 42,800			
Speer 100 Spitz		2.500		24													40.0	2,855	c.u.p. 43,400			
Sierra 120HPBT		2.510		24																40.0	2,680	c.u.p. 43,600
.257 Roberts													c.u.p.			c.u.p.						
Sierra 75HP	Win. 8½-120	2.775	Win.	24							39.0	3,160	42,800	41.8	3,340	42,700						
Speer 87 Spitz		2.775		24							36.5	2,930	c.u.p. 43,300	41.0	3,185	c.u.p. 43,200						
Speer 100 Spitz		2.775		24													44.7	2,930	c.u.p. 43,100			
Sierra 120HPBT		2.775		24																44.0	2,785	c.u.p. 43,000
.257 Roberts+P													c.u.p.			c.u.p.						
Sierra 75HP	Win. 8½-120	2.775	Win.	24							41.0	3,365	48,000	43.4	3,510	48,000						
Speer 87 Spitz		2.775		24							39.5	3,165	c.u.p. 48,000	43.5	3,310	c.u.p. 48,000						
Speer 100 Spitz		2.775		24													47.2	3,110	c.u.p. 47,900			
Sierra 120 HPBT		2.775		24																46.5	2,945	c.u.p. 48,000

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Centerfire Rifle (continued)

Cartridge/Bullet	Primer	Min. OAL (inches)	Case	Bbl Length	2400 Chg Wt	2400 fps	2400 psi	Reloder 7 Chg Wt	Reloder 7 fps	Reloder 7 psi	Reloder 12 Chg Wt	Reloder 12 fps	Reloder 12 psi	Reloder 15 Chg Wt	Reloder 15 fps	Reloder 15 psi	Reloder 19 Chg Wt	Reloder 19 fps	Reloder 19 psi	Reloder 22 Chg Wt	Reloder 22 fps	Reloder 22 psi
.257 Wby. Mag.																						
Sierra 75HP	Fed. 215	3.075	Wby.	26													73.3	3,895	52,900	77.0	3,900	53,000
Speer 87 Spitz		3.150		26													68.4	3,650	53,000	73.0	3,675	52,700
Speer 100 Spitz		3.170		26													64.5	3,420	52,700	69.0	3,460	52,400
Barnes 115 Spitz		3.170		26													61.3	3,175	53,000	64.5	3,200	52,700
Nosler 120 SP		3.170		26													59.7	3,100	53,000	62.7	3,140	52,900
6.5x55 Swedish Mauser																						
Hornady 129SP	CCI 200	2.935	Norma	24				25.8	2,130	c.u.p. 43,600	36.7	2,465	c.u.p. 44,400	38.8	2,620	c.u.p. 44,400	48.0	2,815	c.u.p. 44,500			
Speer 140 Spitz		3.000		24							35.0	2,395	c.u.p. 44,500	36.6	2,480	c.u.p. 44,200	46.0	2,650	c.u.p. 44,000	48.1	2,700	c.u.p. 44,400
Hornady 160RN		2.975		24				25.0	1,940	c.u.p. 44,000	35.2	2,225	c.u.p. 44,200	35.6	2,325	c.u.p. 44,000	45.0	2,500	c.u.p. 44,300	47.0	2,535	c.u.p. 44,000
.264 Win. Mag.																						
Hornady 129 Sp. Pt.	Win. 8½-120	3.270	Win.	24													57.0	3,070	c.u.p. 51,800			
Speer 140 Spitz		3.340		24													56.0	2,945	c.u.p. 51,800	57.0	2,960	c.u.p. 51,300
Hornady 160RN		3.315		24																57.0	2,780	c.u.p. 51,800
.270 Win.																						
Speer 100 Spitz	Win. 8½-120	3.150	Win.	24										53.8	3,465	62,000	64.0	3,510	61,800			
Speer 130 Spitz		3.250		24										47.3	2,840	61,600	57.5	3,110	61,600	60.0	3,160	61,500
Sierra 140SBT		3.280		24										47.0	2,770	61,600	57.0	2,910	61,500	60.0	2,930	59,400
Sierra 150 Spitz BT		3.320		24													55.5	2,945	61,400	58.5	3,010	61,800
Nosler 150 Spitz		3.325		24													56.5	2,810	61,800	59.5	2,845	60,300
.270 Wby. Mag.																						
Speer 100 Spitz	Fed. 215	3.160	Wby.	26													76.8	3,755	c.u.p. 53,400	79.0	3,775	c.u.p. 53,000
Speer 130 Spitz		3.260		26													70.5	3,340	c.u.p. 53,500	73.8	3,400	c.u.p. 53,500
Sierra 140 SBT		3.275		26													68.1	3,240	c.u.p. 53,500	71.0	3,280	c.u.p. 53,500
Sierra 150 SBT		3.285		26													64.4	3,075	c.u.p. 53,500	68.8	3,145	c.u.p. 53,500
Nosler 150 Spitz		3.285		26													64.8	3,090	c.u.p. 53,200	69.7	3,180	c.u.p. 53,500
7-30 Waters																						
Hornady 120 Sp. Pt.	Fed. 210	2.640	Fed.	24				27.3	2,470	c.u.p. 38,600	36.5	2,645	c.u.p. 38,700	36.3	2,725	c.u.p. 39,000						
Hornady 139 F.P.		2.650		24							33.8	2,405	c.u.p. 39,000	34.7	2,540	c.u.p. 38,800						
7mm-08 Rem.																						
Hornady 120 Sp. Pt.	Rem. 9½	2.750	Rem.	24				35.5	2,775	57,200	45.2	2,950	58,400	45.5	3,070	58,700						
Hornady 139 Sp. Pt.		2.800		24				34.0	2,555	57,300	42.5	2,735	59,000	43.0	2,830	59,000	52.0	2,850	57,900			
Speer 145 Spitz		2.800		24				31.8	2,405	57,500	39.6	2,580	59,000	41.0	2,700	59,000	49.3	2,785	58,900			
Sierra 150 HPBT		2.800		24				32.3	2,410	57,300	40.1	2,590	58,500	40.9	2,685	58,600	49.0	2,760	58,700			
Sierra 160 Spitz BT		2.800		24							40.0	2,535	58,900	40.5	2,620	59,000	48.5	2,675	56,400			

See NOTES and KEY on page 55.

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Cartridge/Bullet	Primer	Min. OAL (inches)	Case	Bbl Length	2400 Chg Wt	2400 fps	2400 psi	Reloder 7 Chg Wt	Reloder 7 fps	Reloder 7 psi	Reloder 12 Chg Wt	Reloder 12 fps	Reloder 12 psi	Reloder 15 Chg Wt	Reloder 15 fps	Reloder 15 psi	Reloder 19 Chg Wt	Reloder 19 fps	Reloder 19 psi	Reloder 22 Chg Wt	Reloder 22 fps	Reloder 22 psi
7x57 Mauser																						
Hornady 120 Sp. Pt.	Fed. 210	2.965	Fed.	24							43.0	2,895	48,900	45.0	2,995	48,900	54.0	3,030	48,000			
Hornady 139 Sp. Pt.		3.015		24							40.5	2,660	48,800	41.5	2,700	48,400	51.8	2,835	49,000	53.0	2,790	45,600
Speer 145 Spitz		3.040		24							37.0	2,520	48,800	38.5	2,550	48,500	47.3	2,680	48,800	48.8	2,720	49,000
Sierra 160 Spitz BT		3.040		24													49.0	2,665	45,500	50.0	2,690	48,300
.280 Rem.																						
Hornady 120SP	Rem. 9½	3.310	Rem.	24							47.1	2,985	57,900	48.0	3,065	57,200	58.0	3,115	57,600			
Hornady 139 Sp. Pt.		3.320		24							44.0	2,700	57,100	46.5	2,860	57,700	57.0	2,970	58,000	59.5	3,000	57,500
Speer 145 Spitz		3.320		24							42.5	2,580	57,600	43.0	2,630	57,100	53.0	2,815	57,800	56.0	2,865	58,000
Sierra 160 Spitz BT		3.325		24													53.4	2,750	58,100	55.7	2,795	58,000
.284 Win.																						
Hornady 120 SP	Win. LR	2.800	Win.	24										51.5	3,235	54,300	60.5	3,265	53,600			
Hornady 139SP	8½-120	2.795		24										48.0	2,975	54,700	57.0	3,075	53,500	58.5	3,030	49,000
Speer 145 Spitz		2.795		24										46.7	2,855	55,100	55.0	2,940	52,400	55.0	2,900	49,200
Nosler 150 Part.		2.790		24													55.0	2,940	53,500	55.0	2,840	46,300
Sierra 160 Spitz BT		2.800		24													54.0	2,885	54,600	52.0	2,680	42,700
7mm Rem. Mag																						
Hornady 120 Sp. Pt.	Rem. 9½	3.275	Fed.	24							54.0	3,110	59,000	55.0	3,200	58,300	69.0	3,465	58,600	73.0	3,490	58,600
Hornady 139 Sp. Pt.		3.275		24							57.0	3,035	59,000	55.6	3,070	59,000	67.5	3,260	58,100	70.0	3,295	58,000
Speer 145 Spitz		3.280		24							48.0	2,765	58,900	47.5	2,780	58,700	61.7	3,090	58,400	64.5	3,150	58,600
Sierra 160 Spitz BT		3.285		24													62.0	3,020	58,500	65.0	3,075	58,600
Sierra 175 Spitz BT		3.285		24																61.3	2,900	58,400
7mm Wby. Mag.																c.u.p.			c.u.p.			
Hornady 120 Sp. Pt.	Fed. 215	3.200	Wby.	26										61.3	3,370	52,500	74.0	3,505	52,100			
Hornady 139 Sp. Pt.		3.280		26													70.9	3,315	c.u.p. 52,500	74.8	3,355	c.u.p. 52,300
Speer 145 Spitz		3.240		26													68.0	3,165	c.u.p. 52,200	72.4	3,245	c.u.p. 52,500
Nosler 150 Spitz		3.250		26													67.3	3,145	c.u.p. 52,500	72.0	3,220	c.u.p. 52,400
Sierra 160 Spitz		3.240		26													64.8	3,045	c.u.p. 52,300	70.7	3,110	c.u.p. 52,500
Sierra 175 Spitz		3.245		26													60.5	2,850	c.u.p. 52,200	67.4	2,965	c.u.p. 52,500
.30 Carbine							c.u.p.															
Hornady 100SJ	CCI 400	1.625	Fed.	20	12.3	1,815	34,500															
Cast (GC) 112L		1.625		20	10.3	1,590	c.u.p. 35,700															
.30-06 Springfield																						
Sierra 110JHP	Fed. 210	3.100	Fed.	24	30.9	2,715	55,900	45.0	3,145	56,400	57.0	3,280	58,300	58.6	3,465	58,100						
Sierra 125 Spitz		3.120		24	30.0	2,575	55,100	42.0	2,915	56,600	55.3	3,170	58,300	56.8	3,275	58,500	65.5	2,995	47,300			
Hornady 150 Sp. Pt.		3.210		24	29.4	2,330	56,000	43.8	2,780	57,000	53.6	2,960	58,400	53.6	3,005	58,500	63.5	2,895	50,900	63.0	2,815	46,000
Barnes X 150		3.220		24										50.6	2,910	58,500	63.0	2,950	56,400	62.0	2,845	50,600
Nosler 165 Part.		3.220		24										49.8	2,815	58,500	62.1	2,890	58,500	60.0	2,755	51,300
Speer 165 Spitz		3.250		24	29.2	2,295	55,400	40.5	2,610	56,800	51.1	2,785	57,900	50.5	2,835	58,500	62.0	2,880	56,100	62.0	2,824	52,500
Speer 180 Spitz		3.250		24	28.2	2,210	55,400	39.8	2,505	56,900	49.6	2,695	58,500	48.5	2,720	58,200	60.0	2,800	57,000	60.0	2,710	51,000
Nosler 180 Part.		3.250		24										48.3	2,660	58,500	60.0	2,750	57,100	60.0	2,675	51,500
Win. 180 F.S.	Win. W.L.R.	3.200	Win.	24							45.3	2,515	56,800	47.0	2,600	56,500	57.2	2,685	55,300	59.0	2,670	52,000
Sierra 190 MKing	Fed. 210	3.300	Fed.	24	26.0	2,075	55,600	37.4	2,340	57,400	46.0	2,520	58,300	47.3	2,600	58,500	58.0	2,720	58,100	60.0	2,755	56,600
Sierra 200 Spitz BT		3.300		24							44.8	2,440	58,300	46.0	2,505	58,500	55.8	2,630	58,500	58.4	2,680	58,400

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Centerfire Rifle (continued)

Cartridge/Bullet	Primer	Min. OAL (inches)	Case	Bbl Length	2400 Chg Wt	2400 fps	2400 psi	Reloder 7 Chg Wt	Reloder 7 fps	Reloder 7 psi	Reloder 12 Chg Wt	Reloder 12 fps	Reloder 12 psi	Reloder 15 Chg Wt	Reloder 15 fps	Reloder 15 psi	Reloder 19 Chg Wt	Reloder 19 fps	Reloder 19 psi	Reloder 22 Chg Wt	Reloder 22 fps	Reloder 22 psi
.30-30 Win.																						
Sierra 125JFP	Win. 8½-120	2.470	Win.	24				30.0	2,630	c.u.p. 34,100	37.0	2,555	39,900									
Sierra 150JFP		2.525		24				27.5	2,190	c.u.p. 33,800	33.5	2,320	40,400	36.0	2,450	40,600						
Hornady 170JFP		2.545		24				24.0	1,910	c.u.p. 34,500	32.0	2,160	40,100	34.1	2,330	40,500						
.300 Savage																						
Sierra 125SPT	Rem. 9½	2.600	Rem.	24							46.0	2,920	c.u.p. 44,300									
Sierra 150SPT		2.600		24							43.0	2,635	c.u.p. 41,400									
Sierra 165SBT		2.600		24							41.0	2,485	c.u.p. 40,800									
.300 H&H Mag.																						
Hornady 150 Sp. Pt.	Fed. 210	3.570	Fed.	24										63.8	3,270	c.u.p. 52,500	75.0	3,275	c.u.p. 52,500			
Speer 165 Spitz		3.555		24										60.9	3,065	c.u.p. 52,500	72.7	3,150	c.u.p. 52,500			
Nosler 180 Part.		3.535		24										58.0	2,910	c.u.p. 52,300	70.3	3,040	c.u.p. 52,500	71.0	3,040	c.u.p. 52,100
Speer 180 Spitz		3.575		24										56.7	2,850	c.u.p. 52,400	69.8	3,055	c.u.p. 52,500	71.5	3,070	c.u.p. 52,000
Sierra 200 Spitz BT		3.590		24										55.0	2,725	c.u.p. 52,100	67.0	2,910	c.u.p. 52,100	69.0	2,935	c.u.p. 52,200
.300 Win. Mag																						
Hornady 150 Sp. Pt.	Win. 8½-120	3.340	Win.	24							59.0	3,105	61,200	65.3	3,180	61,000	76.7	3,225	61,000	81.5	3,275	60,400
Speer 165 Spitz		3.340		24							62.0	2,935	60,600	62.6	2,980	60,100	74.6	3,070	60,400	79.4	3,135	60,800
Speer 180 Spitz		3.340		24													72.3	2,990	61,000	76.9	3,030	60,300
Win. 180 F.S.	Win. W.L.R.	3.340		24													72.3	2,850	55,700	76.0	2,870	54,500
Sierra 200 Spitz BT	Win. 8½-120	3.340		24													68.0	2,810	60,300	73.4	2,875	60,300
.300 Wby. Mag.																						
Hornady 150 Sp. Pt.	Fed. 215	3.540	Wby.	26										69.5	3,255	c.u.p. 52,800	82.5	3,375	c.u.p. 52,500	88.0	3,460	c.u.p. 53,300
Speer 165 Spitz		3.510		26										65.0	3,060	c.u.p. 52,800	80.5	3,250	c.u.p. 53,200	85.0	3,305	c.u.p. 53,400
Speer 180 Spitz		3.515		26													78.0	3,120	c.u.p. 53,000	82.5	3,195	c.u.p. 53,400
Nosler 180 Part.		3.530		26													76.5	3,070	c.u.p. 53,400	80.0	3,115	c.u.p. 53,300
Sierra 200 Spitz		3.550		26													74.0	2,955	c.u.p. 53,300	78.0	2,970	c.u.p. 53,000
.303 British																						
Hornady 123SP	Win. 8½-120	2.860	Win.	24				38.6	2,750	c.u.p. 43,200	48.0	2,915	c.u.p. 43,000	49.8	3,015	c.u.p. 43,200						
Speer 150 Spitz		2.935		24				31.0	2,400	c.u.p. 41,200	45.0	2,700	c.u.p. 42,900	46.2	2,755	c.u.p. 43,200						
Speer 180 RN		2.940		24				30.0	2,050	c.u.p. 39,600	40.0	2,340	c.u.p. 42,600	43.7	2,515	c.u.p. 43,200	50.0	2,415	c.u.p. 39,800			

See NOTES and KEY on page 55.

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Cartridge/Bullet	Primer	Min. OAL (inches)	Case	Bbl Length	2400 Chg Wt	2400 fps	2400 psi	Reloder 7 Chg Wt	Reloder 7 fps	Reloder 7 psi	Reloder 12 Chg Wt	Reloder 12 fps	Reloder 12 psi	Reloder 15 Chg Wt	Reloder 15 fps	Reloder 15 psi	Reloder 19 Chg Wt	Reloder 19 fps	Reloder 19 psi	Reloder 22 Chg Wt	Reloder 22 fps	Reloder 22 psi
7.62 x 39																						
Speer 100 Plinker	CCI 200	1.830	Fed.	20	16.5	2,240	c.u.p. 44,900															
Sierra 110HP		2.055		20	16.0	2,115	c.u.p. 44,800	26.5	2,330	c.u.p. 38,300												
Hornady 123SP		2.155		20	15.3	1,915	c.u.p. 44,900	25.5	2,330	c.u.p. 45,000												
Sierra 150JP		2.000		20	14.8	1,800	c.u.p. 45,000	24.8	2,145	c.u.p. 44,600												
.308 Win.																						
Sierra 110JHP	Fed. 210	2.600	Fed.	24				42.5	3,130	c.u.p. 47,200	50.5	3,200	57,400									
Sierra 125 Spitz		2.700		24				40.0	2,920	c.u.p 47,100	49.0	3,040	57,400									
Sierra 150 Spitz		2.600		24	25.0	2,215	c.u.p. 36,700	37.0	2,750	46,900	45.0	2,755	57,100	46.3	2,880	57,300						
Barnes 150X		2.750		24							45.8	2,750	57,400	45.0	2,815	56,800						
Barnes 165X		2.750		24							43.5	2,590	57,200	43.5	2,675	57,000						
Sierra 165 Spitz		2.700		24							44.0	2,650	57,200	45.5	2,780	57,000						
Sierra 168HPBT	Fed. 210M	2.700	Fed.	24							43.0	2,605	57,200	42.8	2,665	56,600						
Speer 180 Spitz	Fed. 210	2.750	Fed.	24										44.0	2,645	57,500						
Win. 180 F.S.	Win. W.L.R.	2.750	Win.	24							36.0	2,290	55,400	41.5	2,500	57,000						
8mm Mauser																						
Hornady 125SP	Win. 8½-120	2.820	Win.	24							45.0	2,720	c.u.p. 35,500	46.8	2,760	c.u.p. 36,000						
Speer 150 Spitz		2.975		24							43.0	2,455	c.u.p. 34,900	44.0	2,560	c.u.p. 36,000						
Speer 170 Spitz		3.015		24							40.0	2,280	c.u.p. 35,300	41.4	2,400	c.u.p. 36,000						
8mm Rem. Mag.																						
Speer 170S Spitz	Rem. 9½M	3.500	Rem.	24													82.8	3,315	61,700	87.2	3,350	61,700
Speer 200 Spitz		3.525		24													77.7	3,050	61,600	81.0	3,090	61,600
Hornady 220 Sp. Pt.		3.600		24													75.0	2,885	61,600	77.0	2,910	61,300
.348 Win.																						
Rem. 150SP	Rem. 9½	2.790	Rem.	24				48.0	2,750	c.u.p. 34,900												
Rem. 200SP		2.790		24				45.0	2,330	c.u.p. 35,800												
.338 Win. Mag.																						
Hornady 200 Sp. Pt.	Win. 8½-120	3.340	Win.	24										65.0	2,935	c.u.p. 51,300	78.0	3,020	c.u.p. 52,400	78.0	2,875	c.u.p. 43,200
Nosler 210 Spitz		3.330		24													74.0	2,910	c.u.p. 52,000	76.0	2,840	c.u.p. 46,200
Hornady 225 Sp. Pt.		3.325		24										61.8	2,705	c.u.p. 51,600	75.3	2,865	c.u.p. 52,100	77.0	2,790	c.u.p. 46,200
Barnes 225X		3.335		24										56.5	2,590	c.u.p. 51,600	72.0	2,765	c.u.p. 50,900	73.0	2,705	c.u.p. 46,900
Win. 230 F.S.	Win. W.L.R.	3.335		24													72.0	2,790	p.s.i. 60,500	73.0	2,760	p.s.i. 56,400
Hornady 250RN	Win. 8½-120	3.330		24													73.0	2,735	c.u.p. 52,300	73.0	2,620	c.u.p. 45,300
.340 Wby. Mag.																						
Hornady 200 Sp. Pt.	Fed. 215	3.660	Wby.	26										71.8	2,990	c.u.p. 53,100	85.0	3,095	c.u.p. 53,300	91.0	3,170	c.u.p. 53,200
Nosler 210 Spitz		3.595		26										70.8	2,930	c.u.p. 53,500	84.3	3,075	c.u.p. 53,500	89.2	3,135	c.u.p. 53,500
Hornady 225 Sp. Pt.		3.645		26													83.7	2,995	c.u.p. 53,500	88.0	3,035	c.u.p. 53,400
Hornady 250RN		3.665		26													80.7	2,865	c.u.p. 53,500	84.7	2,880	c.u.p. 53,300

See NOTES and KEY on page 55.

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Centerfire Rifle (continued)

Cartridge/Bullet	Primer	Min. OAL (inches)	Case	Bbl Length	2400 Chg Wt	2400 fps	2400 psi	Reloder 7 Chg Wt	Reloder 7 fps	Reloder 7 psi	Reloder 12 Chg Wt	Reloder 12 fps	Reloder 12 psi	Reloder 15 Chg Wt	Reloder 15 fps	Reloder 15 psi	Reloder 19 Chg Wt	Reloder 19 fps	Reloder 19 psi	Reloder 22 Chg Wt	Reloder 22 fps	Reloder 22 psi
.35 Rem.																						
Rem. 150SPCL	Win. 8½-120	2.485	Win.	24				32.0	2,290	c.u.p. 30,700												
Cast (GC) 158L		2.485		24				28.0	2,200	c.u.p. 29,800												
Rem. 200SPCL		2.485		24				31.0	2,115	c.u.p. 30,700												
.350 Rem. Mag.																						
Rem. 150SPCL	Rem. 9½M	2.800	Rem.	20				55.0	3,075	c.u.p. 47,500												
Rem. 200SPCL		2.800		20				48.0	2,550	c.u.p. 48,500												
Rem. 250PSP		2.800		20				43.0	2,230	c.u.p. 49,300												
.358 Win.																						
Rem. 200PSP	Win. 8½-120	2.780	Win.	24				38.0	2,420	c.u.p. 46,100	50.0	2,455	c.u.p. 44,100									
Win. 250ST		2.780		24				34.5	2,075	c.u.p. 44,700												
.35 Whelen																						
Hornady 200SP	Rem. 9½M	3.125	Rem.	24				51.5	2,630	c.u.p. 50,300	60.0	2,590	c.u.p. 43,200	60.0	2,675	c.u.p. 44,800						
Hornady 250RN		3.225		24				47.6	2,330	c.u.p. 50,400	60.0	2,505	c.u.p. 49,700	59.5	2,550	c.u.p. 48,400						
.375 Win.																						
Hornady 220FP	Win. 8½-120	2.555	Win.	24	23.5	1,900	c.u.p. 44,000	36.0	2,260	c.u.p. 45,500												
.375 H&H Mag.																						
Hornady 220FP	Rem. 9½M	3.360	Rem.	24							75.0	2,835	c.u.p. 49,500	77.0	2,980	c.u.p. 50,000						
Hornady 270SP		3.545		24							73.5	2,540	c.u.p. 49,700	73.4	2,685	c.u.p. 49,500						
Hornady 300MC		3.550		24										66.5	2,455	c.u.p. 49,600	79.0	2,540	c.u.p. 49,600			
.378 Wby. Mag.																						
Hornady 270SP	Fed. 215	3.620	Wby.	26										90.5	2,940	c.u.p. 53,300	110.8	3,110	c.u.p. 53,100	115.0	3,050	c.u.p. 47,200
Barnes 300 Solid		3.625		26													108.6	2,960	c.u.p. 53,300	114.0	2,965	c.u.p. 51,600
.38/55 Win.																						
IVI 255SP	CCI 200	2.530	IVI	24	18.0	1,410	c.u.p. 23,500	26.5	1,725	c.u.p. 26,000												
.38/40 Win.																						
150 Sierra JHP	Rem. 2½	1.585	Rem.	24	14.1	1,425	c.u.p. 13,100															
180 Sierra JHP		1.585		24	13.0	1,305	c.u.p. 13,400	25.8	1,745	c.u.p. 13,500												
200 Hornady FMJ/FP		1.585		24	12.7	1,225	c.u.p. 13,500	24.0	1,610	c.u.p. 13,400												
.416 Rem. Mag																						
Barnes 300X	Rem. 9½M	3.600	Rem.	24							90.0	2,790	c.u.p. 52,100	90.5	2,890	c.u.p. 52,400						
Barnes 350X		3.600		24							85.0	2,525	c.u.p. 52,400	85.0	2,610	c.u.p. 52,400						
Hornady 400RN		3.565		24							82.0	2,390	c.u.p. 52,000	82.0	2,445	c.u.p. 51,700	83.0	2,140	c.u.p. 35,600			
A Square 400 Solid		3.600		24							81.0	2,410	c.u.p. 52,400	81.0	2,455	c.u.p. 50,900	82.0	2,130	c.u.p. 35,600			

See NOTES and KEY on page 55.

continued on next page

Cartridge/Bullet	Primer	Min. OAL (inches)	Case	Bbl Length	2400 Chg Wt	2400 fps	2400 psi	Reloder 7 Chg Wt	Reloder 7 fps	Reloder 7 psi	Reloder 12 Chg Wt	Reloder 12 fps	Reloder 12 psi	Reloder 15 Chg Wt	Reloder 15 fps	Reloder 15 psi	Reloder 19 Chg Wt	Reloder 19 fps	Reloder 19 psi	Reloder 22 Chg Wt	Reloder 22 fps	Reloder 22 psi
.416 Rigby																						c.u.p.
Barnes 300X	Fed. 215	3.650	Fed.	24																103.0	2,590	40,000
Barnes 350X		3.675		24																101.0	2,455	c.u.p. 40,300
Hornady 400RN		3.725		24																96.0	2,355	c.u.p. 39,800
A Square 400 Solid		3.725		24																96.0	2,360	c.u.p. 40,300
.416 Wby. Mag.																						c.u.p.
Barnes 325X	Fed. 215	3.650	Wby.	26																117.0	2,880	51,000
Barnes 350X		3.650		26																116.9	2,830	c.u.p. 51,000
Hornady 400SP		3.615		26																117.5	2,720	c.u.p. 51,000
A Square 400 Solid		3.680		26																117.0	2,705	c.u.p. 50,500
.44/40 Win.																						
Rem. 200SP	Rem. 2½	1.590	Rem.	24	14.5	1,230	c.u.p. 12,500															
Cast 240L		1.580		24	12.0	1,130	c.u.p. 12,500	23.5	1,290	c.u.p. 12,100												
.444 Marlin																						
Speer 240SP	Rem. 9½	2.500	Rem.	24	25.0	1,730	c.u.p. 21,900	51.0	2,400	c.u.p. 38,100												
Cast (GC) 240L		2.500		24	22.0	1,725	c.u.p. 27,900	42.5	2,080	c.u.p. 28,900												
Hornady 265FP		2.500		24	25.0	1,715	c.u.p. 22,100	47.0	2,215	c.u.p. 35,800												
.45/70 Govt.																						
Hornady 300HP	Rem. 9½	2.475	Rem.	24	30.0	1,650	c.u.p. 23,000	50.0	2,075	c.u.p. 24,700												
Cast (GC) 385L		2.575		24	25.0	1,340	c.u.p. 21,300	45.0	1,810	c.u.p. 25,100												
Speer 400FN		2.700		24	25.0	1,260	c.u.p. 24,000	40.0	1,580	c.u.p. 24,900	54.0	1,710	c.u.p. 26,100									
.458 Win. Mag.																						
Hornady 300HP	Win. 8½-120	2.950	24	Win.	35.0	1,590	c.u.p. 13,500	70.0	2,555	c.u.p. 41,400												
Cast (GC) 385L		3.000	24		30.0	1,290	c.u.p. 14,200	65.0	2,285	c.u.p. 42,100												
Hornady 500FMJ		3.280	24		35.0	1,415	c.u.p. 32,600	64.0	2,000	c.u.p. 47,000												

NOTES and KEY pertain to Silhouette and Centerfire rifle tables.
See Special Reloading Precautions on page 56.

NOTES:

1. *Do not intermix cases of different manufacture, nor bullets, nor primers.*
2. *Be sure that each case is crackfree and completely empty.*
3. *Unless specifically recommended, use standard primers. Magnum primers are neither needed nor recommended for most calibers.*
4. *Do not exceed the powder weight shown, and guard against accidental multiple charges of powder.*
5. *Start with 10% less powder than shown. Work up gradually, watching for signs of high pressure.*
6. *Be sure that every completed cartridge is not shorter than the length listed.*
7. *Watch for signs of case head separation.*

KEY

BR	*=Bench Rest*	*M*	*=Match*	*in.*	*=inches*
FMC	*=Full Metal Case*	*psi*	*=Chamber pressure, piezo system*	*gr.*	*=grains*
FMJ	*=Full Metal Jacket*			*Vel.*	*=velocity*
FN	*=Flat Nose*	*PSP*	*=Pointed Soft Point*	*fps*	*=feet per second*
FP	*=Flat Point*	*RN*	*=Round Nose*	*c.w.*	*=powder charge weight*
FS	*=Fail Safe*	*SB*	*=Solid Base*	*c.u.p.*	*=chamber pressure, in copper units*
GC	*=Gas Check*	*SJ*	*=Semijacketed*		
HB	*=Hollow Base*	*SP*	*=Soft Point*	*Min*	*=minimum overall*
HC	*=Hollow Cavity*	*Sp. Pt.*	*=Spire Point*	*OAL*	*length, measured from base to tip of bullet*
HP	*=Hollow Point*	*WC*	*=Wad Cutter*		
J	*=Jacketed*	*Wt*	*=weight*		
L	*=Lead*	*Bbl*	*=barrel*		

Pistol and Revolver Cartridges Special Reloading Precautions

Most pistols and revolvers function best when loaded with a quick-burning powder such as Bullseye. Since peak pressure is reached very quickly, the SEATING DEPTH of the bullet is very important: the deeper the bullet, the higher the pressure. If the bullet is seated too deeply, dangerous pressures will be generated, which could burst the gun and cause severe personal injury (including death).

Equally critical is the powder charge. Guard AGAINST multiple charges when reloading. Certain cartridges (notably .38 Special) have been reloaded accidentally with double and even triple charges, with catastrophic results when fired in the gun.

A. Prevent deeply seated bullets.
   1. Your assembled cartridges must be as long as, or longer than, the minimum length listed for the combination you are reloading.
   2. Set your bullet station accordingly and lock tool securely.
   3. Keep bullet station clean of accumulating lead and grease.
   4. Inspect all loaded rounds for overall length.
   5. Be sure every bullet is held tightly by shell mouth, especially pistol loads (recoil drives magazine against bullet noses of contained cartridges).

B. Prevent multiple charges.
   1. Handloading: Keep track of every powder charge, then look inside all shells and compare powder levels.
   2. Progressive reloading: Be sure every shell is truly empty; don't back up the turret; don't jiggle the handle; don't use a shell to clean out the powder train (use a paper cup or equivalent).

C. Inspection.
   1. Discard cases with split mouths.
   2. Discard cases with enlarged primer pockets.
   3. Do not use cases that are designed for primer-propelled practice cartridges; such cases may not be designed for full power loads.

Physical Effect of Gun Recoil (Kick)

The rearward motion of every gun, its recoil, increases when heavier shot or heavier bullets are fired, and when higher velocity loads are fired. This motion must be opposed by the shoulder, or the pistol hand, of the shooter. Whenever the recoil is perceptibly annoying to the shooter, accuracy on succeeding firings undoubtedly diminishes.

When the shooting condition demands heavy loads and high velocity, recoil kick can be reduced by using a heavier gun, and by spreading the force over a larger area of the anatomy, such as by using a wider stock, larger grip, plus shoulder pad or softer grip.

Excellent publications available to the reloader, plus his or her own growing sophistication, have generated a wholesome trend away from maximum loads and toward accuracy of loads no more powerful than needed to accomplish the particular shot. Reducing recoil increases accuracy.

Contributing to increased accuracy as well as the pleasantness of shooting is in two main areas:

1. This *Reloaders' Guide* includes many reduced loads.
2. Our research indicates that the burning rate of powders has a modest effect on recoil. For example, whenever two or more powders are listed for the same load, the slower one usually is chosen by the expert shooter as giving milder felt recoil. An intriguing aspect of reloading at home is the freedom to assemble, for example, trap loads with Red Dot or Green Dot powder, then to shoot them alternately to decide which seems more comfortable.

Handloading Precautions

1. Understand what you are doing and why. Read handbooks and manuals on reloading. Talk to experienced reloaders. Write or call suppliers of components if you have questions or are in doubt.
2. Stay *alert* when reloading. Do not reload when distracted.
3. Establish a loading procedure and follow it. Do not vary your sequence of operations.
4. Examine empty cases (shotshell or metallic) to be sure they are in good condition before reloading. Never force live cartridges into or out of the chamber of a gun.
5. Do not use cases that are designed for primer-propelled practice cartridges; such cases may not be designed for full power loads.
6. Do not *ream* out or *enlarge* flash holes of metallic cartridge cases. This may change the ignition rate and result in dangerous pressures.
7. Do not punch out live primers. Fire the empty primed shells in a gun.
8. Do not mix primers. Primers differ in brisance of ignition, which affects pressure and velocity. Use only the primer listed.
9. The shotshell loading data in the *Reloaders' Guide* are for *LEAD SHOT only.* *DO NOT USE STEEL SHOT.*
10. One-piece plastic wads for shotshells vary in compressibility and gas-sealing effectiveness. Use only the wad listed.
11. If you "throw," or measure powder charges by volume, check-weigh the charge frequently. Do not *mix* powders.
12. Do not use powders near a flame, spark-producing machinery, or heating device. Do not expose powders to temperatures above 100°F.
13. Keep out of reach of children.
14. Do not smoke while reloading.

Crusher/Piezo Pressure Tabulation

The following table lists the maximum average pressures, measured by the crusher system (c.u.p.) or piezo system (psi), utilized for the centerfire rifle recommendations in this brochure.

The values listed in the "c.u.p" and "psi" columns are approximately the same pressure. The difference is due to the measuring system used and does not indicate that a pressure change has occurred.

Cartridge	C.U.P.	PSI	Cartridge	C.U.P.	PSI
.22-250 Remington	53,000	62,000	7mm Remington Magnum	52,000	61,000
.222 Remington	46,000	50,000	.280 Remington	50,000	60,000
.223 Remington	52,000	55,000	.30 Carbine	40,000	
6mm Remington	52,000	65,000	.30-06 Springfield	50,000	60,000
.243 Winchester	52,000	60,000	.30-30 Winchester	38,000	42,000
.25-06 Remington	53,000	63,000	.300 Savage	46,000	
.257 Roberts	45,000	54,000	.300 Winchester Magnum	54,000	64,000
.257 Roberts +P	50,000	58,000	.303 British	45,000	49,000
.270 Winchester	52,000	65,000	.308 Winchester	52,000	60,000
7mm-08 Remington	52,000	57,500	8mm Mauser	37,000	
7-30 Waters	40,000	45,000	8mm Remington Magnum	54,000	65,000
7 x 57 Mauser	46,000	51,000	.338 Winchester Magnum	54,000	64,000
			.35 Remington	35,000	
			.45-70 Government	28,000	

Notes

Some Publications on Reloading

These and other good literature pertinent to reloading usually are stocked at local gun and ammunition retail stores.

Title	Publisher
Basic Rules for Reloading Safety	National Reloading Manufacturers Association 4905 S. W. Griffith Drive Beaverton, OR 97005
Handloading	NRA Bookservice 11250 Waples Mill Road Fairfax, VA 22030
Speer Reloading Manual	Blount Industries Box 856 Lewiston, ID 83501
RCBS Reloading Guide	RCBS Box 1919 Oroville CA 95965
Tips on Better Reloading	Remington Arms Bridgeport, CT 06602
Hornady Handbook of Cartridge Reloading *Hornady Reloading Tools and Accessories*	Hornady Mfg. Co. Box 1848 Grand Island, NB 68801
Sierra Bullets Reloading Manual	Sierra 10532 Painter Avenue Santa Fe Springs, CA 90670
Lyman Cast Bullet Handbook *Lyman Shotshell Handbook* *Lyman Pistol and Revolver Handbook*	Lyman Products Middlefield, CT 06455
Nosler Reloading Manual	Nosler Bullets, Inc. P.O. Box 671 Bend, OR 97709
How to Reload Shotshells and Why	MEC 715 South Street Mayville, WI 53050
Ponsness-Warren Catalog	Ponsness-Warren Box 8 Rathdrum, ID 83858
Handloaders' Digest *ABC's of Reloading*	DBI Books 540 Frontage Road Northfield, IL 60093
The Handbook of Shotshell Reloading	SKR Industries, Inc. P.O. Box 1382 San Angelo, TX 76092

Alliant Techsystems
New River Energetics
Route 114 P.O. Box 6
Radford, VA 24141-0096

Visit our web site at
http://reloading.ATK.com